

# SUPERARC® LA-100™

Low Alloy, Copper Coated ■ AWS ER100S-G, ER110S-G & EM2

## KEY FEATURES

- Capable of producing welds with 690 MPa (100 ksi) tensile strength
- Excellent for welding quenched and tempered steels and HY-80 base materials
- Supports short-circuiting, globular, axial spray and pulsed spray transfer
- Copper coating provides superior arc-starting characteristics for long contact tip life

## WELDING POSITIONS

All

## SHIELDING GAS

75-95% Argon / Balance CO<sub>2</sub>  
 95-98% Argon / Balance O<sub>2</sub>  
 Flow Rate: 30 - 50 CFH

## CONFORMANCES

<b>AWS A5.28:</b>	ER100S-G, ER110S-G
<b>ASME SFA-A5.28:</b>	ER100S-G, ER110S-G
<b>AWS A5.23:</b>	EM2
<b>ABS:</b>	4YQ550SA
<b>CWB/CSA W48-06:</b>	ER69S-G (ER100S-G)
<b>DB:</b>	EN 12534 T 69 5 Mn3Ni1, 5 Mo
<b>TUV:</b>	EN 12534 T 69 5 Mn3Ni1, 5 Mo
<b>EN ISO 16834-B:</b>	G 69A 5 A N3M2
<b>MIL-E-23765/2:</b>	MIL-100S-1

## TYPICAL APPLICATIONS

- HY-80 base material
- ASTM A514, A543, A724 and A782 quenched and tempered plate
- Various heat input conditions
- Military low alloy applications

## DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Steel Spool	44 lb (20 kg) Steel Spool	60 lb (27.2 kg) Coil	500 lb (227 kg) Accu-Trak® Drum	500 lb (227 kg) Accu-Pak® Box
0.035 (0.9)		EDS30778		ED031445	
0.045 (1.1)	ED031417	EDS30779		EDS01162	ED036608
1/16 (1.6)			ED010996		

## MECHANICAL PROPERTIES<sup>(1)</sup> – As Required per AWS A5.28

	Yield Strength <sup>(2)</sup> MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf)	
				@ -18°C (0°F)	@ -51°C (-60°F)
<b>Requirements</b> – AWS ER100S-G As-Welded – Gas Not Specified	Not Specified	690 (100) min	Not Specified	Not Specified	Not Specified
AWS ER110S-G As-Welded – Gas Not Specified	Not Specified	760 (110) min	Not Specified	Not Specified	Not Specified
MIL-100S-1 per MIL-E-23765/2C, 2D, 2E & T9074-BC-G1B-010/0200 As-Welded with 98% Ar / 2% O <sub>2</sub>	565-825 (82-120)	Not Specified	16 min.	81 (60) min	47 (35) min
<b>Typical Results<sup>(3)</sup></b> As-Welded at 30 kJ/in with 95% Ar/5% CO <sub>2</sub> As-Welded at 45 kJ/in with 98% Ar/2% O <sub>2</sub>	750 (109) 730 (106)	790 (115) 780 (114)	22 20	164 (121) - -	138 (102) 118 (87)
Pulse As-Welded at 110 kJ/in with 95% Ar/5% CO <sub>2</sub>	580 (84)	745 (108)	25	138 (102)	70 (52)
CV As-Welded at 110 kJ/in with 95% Ar/5% CO <sub>2</sub>	620 (90)	740 (107)	25	170 (125)	106 (78)
As-Welded at 45 kJ/in with 95% Ar/5% CO <sub>2</sub>	682 (99)	765 (111)	20	- -	117 (86)

<sup>(1)</sup>Typical all weld metal. <sup>(2)</sup>Measured with 0.2% offset. <sup>(3)</sup>See test results disclaimer

**WIRE COMPOSITION<sup>(1)</sup> – As Required per AWS A5.28**

	%C	%Mn	%Si	%Ni	%Mo
<b>Requirements</b> – AWS ER100S-G, ER110S-G	-	-	-	(A)	(A)
<b>Typical Results<sup>(3)</sup></b>	0.05-0.06	1.63-1.69	0.46-0.50	1.88-1.96	0.43-0.45
	%Cr	%S	%P	%V	
<b>Requirements</b> – AWS ER100S-G, ER110S-G	(A)	-	-	-	
<b>Typical Results<sup>(3)</sup></b>	0.04-0.06	0.002-0.005	0.005-0.009	≤ 0.01	
	%Al	%Ti	%Zr	%Cu	
<b>Requirements</b> – AWS ER100S-G, ER110S-G	-	-	-	-	
<b>Typical Results<sup>(3)</sup></b>	≤ 0.01	0.03-0.04	≤ 0.01	0.11-0.14	

(A) Must have the minimum of one or more of the following: 0.50% Ni, 0.30% Cr, or 0.20% Mo.

**TYPICAL OPERATING PROCEDURES**

Diameter, Polarity Shielding Gas	CTWD <sup>(5)</sup> mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)
<b>0.035 in (0.9 mm), DC+</b>					
Short Circuit Transfer 75% Ar/25% CO <sub>2</sub>	9-12 (3/8-1/2)	2.5 (100)	18	80	0.7 (1.6)
		3.8 (150)	19	120	1.1 (2.4)
		6.4 (250)	22	175	1.8 (4.0)
Spray Transfer 90% Ar/10% CO <sub>2</sub>	9-12 (3/8-1/2)	9.5 (375)	23	195	2.7 (6.0)
		12.7 (500)	29	230	3.6 (8.0)
		15.2 (600)	30	275	4.4 (9.6)
<b>0.045 in (1.1 mm), DC+</b>					
Pulsed Spray Transfer <sup>(5)</sup>	12-19 (1/2-3/4)	5.1 (200)	19-21	130	2.4 (5.4)
		6.4 (250)	20-23	140	3.0 (6.7)
Spray Transfer 98% Ar/2% O <sub>2</sub> 95% Ar/5% CO <sub>2</sub>	12-19 (1/2-3/4)	8.9 (350)	27	285	4.2 (9.2)
		12.1 (475)	30	335	5.7 (12.5)
		12.7 (500)	30	340	6.0 (13.2)
<b>1/16 in (1.6 mm), DC+</b>					
Spray Transfer 98% Ar/2% O <sub>2</sub> 95% Ar/5% CO <sub>2</sub>	12-25 (1/2-1) 12-25 (1/2-1)	5.3 (210)	25	325	4.8 (10.7)
		6.0 (235)	27	350	5.4 (12.0)
		7.4 (290)	28	430	6.7 (14.8)

<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>CTWD (Contact Tip to Work Distance). Subtract 1/4 in (6.4 mm) to calculate Electrical Stickout.

<sup>(5)</sup>Procedures in this area are for pulse MIG mode for welding in the vertical up and overhead welding positions. Actual results are dependent on joint, material thickness, as well as wave shape and pulse frequency.

Safety Data Sheets (SDS) 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**

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