SUPERARC® L-56®

Mild Steel, Copper Coated ▪ AWS ER70S-6 & EH11K

BUY AMERICA

KEY FEATURES

- High levels of manganese and silicon deoxidizers tolerate medium to heavy mill scale surfaces
- Excellent toe-wetting provides optimal bead appearance
- Copper coating provides superior arc-starting characteristics for long contact tip life
- Supports short-circuiting, globular, axial spray and pulsed spray transfer
- MicroGuard® Ultra provides superior feeding and arc stability

TYPICAL APPLICATIONS

- Medium to heavy mill scale base material
- Sheet metal to 380-485 MPa (55-70 ksi) yield strength material
- Automotive repair
- Robotic or hard automation
- Structural steel
- Pressure vessels

CONFORMANCES

AWS A5.18:	ER70S-6
ASME SFA-A5.18:	ER70S-6
AWS A5.17:	EH11K
ABS:	3YSA
Lloyd's Register:	3YS H5
DNV Grade:	III YMS
CWB/CSA W48-06:	ER49S-6
DB:	EN 440 G3Si1
TUV:	EN 440 G3Si1
EN ISO 14341-B:	G 49A 3 C S6
MIL-E-23765/1:	MIL-70S-6

WELDING POSITIONS

All

SHIELDING GAS

100% CO_2
75-95% Argon / Balance CO_2

95-98% Argon / Balance O_2
Flow Rate: 30-50 CFH

Diameter in (mm)	2 lb (1 kg) Plastic Spool 10 lb (4.5 kg) Master Carton	12.5 lb (5.7 kg) Plastic Spool	33 lb (15 kg) Plastic Spool	33 lb (15 kg) Steel Spool	44 lb (20 kg) Steel Spool
0.025 (0.6)	ED030583	ED015790			
0.030 (0.8)	ED030631	ED023334	ED032926		
0.035 (0.9)	ED030632	ED028676	ED032927	ED031411	ED025945
0.045 (1.1)		ED029042	ED032928	ED031412	ED025946

Diameter in (mm)	44 lb (20 kg) Fiber Spool	60 lb (27.2 kg) Coil	60 lb (27.2 kg) Fiber Spool	250 lb (113.4 kg) Accu-Trak® Drum
0.030 (0.8)				
0.035 (0.9)	ED021274, ED033704*		ED021275	ED029914
0.040 (1.0)	ED027384			
0.045 (1.1)	ED021276, ED033703*, ED033328**		ED021277, ED036730*	ED029915
0.052 (1.3)	ED021278, ED033705*		ED021279	ED029916
1/16 (1.6)		ED011666, ED033710*		

Diameter in (mm)	500 lb (227 kg) Accu-Trak® Drum	500 lb (227 kg) Accu-Pak® Box	500 lb (227 kg) Infinity-Pak	1000 lb (454 kg) Infinity-Pak
0.030 (0.8)	ED030771			
0.035 (0.9)	ED021056	ED032904	ED034394	ED036632
0.040 (1.0)	ED031937			
0.045 (1.1)	ED020532, ED036219**	ED032906, ED034248**		ED036633
0.052 (1.3)	ED020533	ED032907		
1/16 (1.6)	ED029225, ED033707*			

Diameter in (mm)	900 lb (408 kg) Accu-Pak® Box	1000 lb (454 kg) Accu-Trak® Drum	1000 lb (454 kg) Accu-Pak® Box	1000 lb (454 kg) Precise-Trak® Reel
0.035 (0.9)	ED032847, ED034429*	ED028827		ED033271
0.040 (1.0)		ED031032		
0.045 (1.1)		ED028828	ED032849, ED033706*	ED031616
0.052 (1.3)		ED029084	ED032850, ED033702*	ED031617
1/16 (1.6)		ED029085	ED032851	

**Buy America Product **Tested Material*

MECHANICAL PROPERTIES[1] – *As Required per AWS A5.18*

	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft•lbf) @ -29°C (-20°F)	Charpy V-Notch J (ft•lbf) @ -40°C (-40°F)
Requirements - AWS ER70S-6 As-Welded with 100% CO_2	400 (58) min	485 (70) min	22 min.	27 (20) min.	Not Specified
MIL-70S-6 per MIL-E-23765/1 As-Welded with CO_2 and 98% Ar/2% O_2	380-550 (55-80)	485 (70) min	22 min	Not Specified	Not Specified
MIL-70S-6 per MIL-E-23765/1 Stress Relieved 1 hr. @ 621°C (1150° F) with CO_2 and 98% Ar/2% O_2	360 (52) min	485 (70) min	26 min	27 (20) min	Not Specified
Typical Results[3] As-Welded with 100% CO_2 Stress Relieved 1 hr. @ 621°C (1150°F)	 440 (64) 395 (57)	 560 (81) 510 (74)	 29 29	 71 (52) 95 (70)	 61 (45) 68 (50)
As-Welded with 75% Ar/25% CO_2 Stress Relieved 1 hr. @ 621°C (1150°F)	460 (67) 415 (60)	565 (82) 540 (78)	27 31	82 (60) 140 (103)	72 (53) 122 (90)
As-Welded with 90% Ar/10% CO_2 Stress Relieved 1 hr. @ 621°C (1150°F)	470 (68) 440 (64)	580 (84) 550 (80)	28 32	119 (88) 183 (135)	78 (57) 156 (115)
As-Welded with 98% Ar/2% O_2 Stress Relieved 1 hr. @ 621°C (1150°F)	455 (66) 415 (60)	565 (82) 545 (79)	27 34	122 (90) 190 (140)	108 (80) 176 (130)

WIRE COMPOSITION[1] – *As Required per AWS A5.18*

	%C	%Mn	%Si	%S	%P
Requirements - AWS ER70S-6	0.06-0.15	1.40-1.85	0.80-1.15	0.035 max	0.025 max
Typical Results[3]	0.08-0.09	1.42-1.60	0.81-0.87	0.006-0.010	0.004-0.010
	%Cr	**%Ni**	**%Mo**	**%V**	**%Cu (Total)[4]**
Requirements - AWS ER70S-6	0.15 max	0.15 max	0.15 max	0.03 max	0.50 max
Typical Results[3]	0.01-0.05	≤ 0.04	≤ 0.01	< 0.01	0.17-0.22

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD[5] mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)
0.025 in (0.6 mm), DC+					
Short Circuit Transfer 100% CO_2	9-12 (3/8-1/2)	2.5 (100) 6.4 (250)	17 19	35 80	0.4 (0.9) 0.9 (2.0)
0.030 in (0.8 mm), DC+					
Short Circuit Transfer 100% CO_2	9-12 (3/8-1/2)	1.9 (75) 3.8 (150) 7.6 (300)	17 18 22	35 70 130	0.4 (0.9) 0.8 (1.8) 1.6 (3.6)
0.035 in (0.9 mm), DC+					
Short Circuit Transfer 100% CO_2 [6]	9-12 (3/8-1/2)	2.5 (100) 3.8 (150) 6.4 (250)	18 19 22	80 120 175	0.7 (1.6) 1.1 (2.4) 1.8 (4.0)
Spray Transfer 90% Ar/10% CO_2	12-19 (1/2-3/4)	9.5 (375) 12.7 (500) 15.2 (600)	23 29 30	195 230 275	2.7 (6.0) 3.6 (8.0) 4.4 (9.6)
0.045 in (1.1 mm), DC+					
Short Circuit Transfer 100% CO_2 [6]	12-19 (1/2-3/4)	3.2 (125) 3.8 (150) 5.1 (200)	19 20 21	145 165 200	1.5 (3.4) 1.8 (4.0) 2.5 (5.4)
Spray Transfer 90% Ar/10% CO_2	12-19 (1/2-3/4)	8.9 (350) 12.1 (475) 12.7 (500)	27 30 30	285 335 340	4.2 (9.2) 5.7 (12.5) 6.0 (13.2)
0.052 in (1.3 mm), DC+					
Spray Transfer 90% Ar/10% CO_2	12-19 (1/2-3/4)	7.6 (300) 8.1 (320) 12.3 (485)	30 30 32	300 320 430	4.8 (10.7) 5.2 (11.5) 7.8 (17.1)
1/16 in (1.6 mm), DC+					
Spray Transfer 90% Ar/10% CO_2	12-25 (1/2-1)	5.3 (210) 6.0 (235) 7.4 (290)	27 28 29	325 350 430	4.8 (10.7) 5.4 (12.0) 6.7 (14.8)

[1]Typical all weld metal. [2]Measured with 0.2% offset. [3]See test results disclaimer [4]Copper due to any coating on the electrode plus the copper content of the filler metal itself, shall not exceed the stated 0.50% max. [5]CTWD (Contact Tip to Work Distance). Subtract 1/4 in (6.4 mm) to calculate Electrical Stickout. [6]Procedures in these areas are procedures for short circuiting mode using 100% CO_2. When using 75% Argon, 25% CO_2 for short circuit transfer, reduce voltage by 1 to 2 volts.

Material Safety Data Sheets (MSDS) and Certificates of Conformance are available on our website at 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.

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