

SUPERGLIDE® S3

Mild Steel, Non-Copper Coated Wire ▪ AWS ER70S-3

KEY FEATURES

- Moderate levels of manganese and silicon for deoxidization of clean to light mill scale surfaces
- MicroGuard® Ultra provides superior feeding and arc stability
- Supports short-circuiting, globular, axial spray and pulsed spray transfer
- Non-copper coated

WELDING POSITIONS

All

SHIELDING GAS

100% CO₂
 75-95% Argon / Balance CO₂
 95-98% Argon / Balance O₂
 Flow Rate: 30-50 CFH

CONFORMANCES

AWS A5.18/A5.18M:	ER70S-3
ASME SFA-A5.18:	ER70S-3
CWB/CSA W48-06:	ER49S-3
EN ISO 14341-B:	G 49A 2 C S3

TYPICAL APPLICATIONS

- Clean to light mill scale base material
- Sheet metal to 380-485 MPa (55-70 ksi) yield strength material
- Pipeline
- Pressure vessels
- Structural steel

DIAMETERS / PACKAGING

Diameter in (mm)	44 lb (20 kg) Fiber Spool	500 lb (227 kg) Accu-Trak® Drum
0.035 (0.9)	ED028621	ED030772
0.045 (1.1)	ED028622	ED030773

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.18/A5.18M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft•lbf)	
				@ -18°C (0°F)	@ -29°C (-20°F)
Requirements – AWS ER70S-3 As-Welded with 100% CO ₂	400 (58) min	485 (70) min	22 min	27 (20) min	Not Specified
Typical Results⁽³⁾ – As-Welded with 100% CO ₂	405 (59)	510 (74)	26	100 (74)	87 (64)

WIRE COMPOSITION – As Required per AWS A5.18/A5.18M

	%C	%Mn	%Si	%S	%P
Requirements – AWS ER70S-3	0.006-0.15	0.90-1.40	0.45-0.75	0.035 max	0.025 max
Typical Results⁽³⁾	0.07-0.10	1.15-1.27	0.52-0.59	0.002-0.008	0.005-0.013
	%Cr	%Mo	%Ni	%V	%Cu
Requirements – AWS ER70S-3	0.15 max	0.15 max	0.15 max	0.03 max	0.50 max
Typical Results⁽³⁾	≤ 0.03	≤ 0.01	≤ 0.04	< 0.01	0.02-0.04

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁴⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)
0.035 in (0.9 mm), DC+					
Short Circuit Transfer 100% CO ₂ ⁽⁵⁾	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 ₂	12-19 (1/2-3/4)	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)
0.045 in (1.1 mm), DC+					
Short Circuit Transfer 100% CO ₂ ⁽⁵⁾	12-19 (1/2-3/4)	3.2 (125)	19	145	1.5 (3.4)
		3.8 (150)	20	165	1.8 (4.0)
		5.1 (200)	21	200	2.4 (5.4)
Spray Transfer 90% Ar/10% CO ₂	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)

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾CTWD (Contact Tip to Work Distance). Subtract 1/4 in (6.4 mm) to calculate Electrical Stickout.⁽⁵⁾Procedures in these areas are procedures for short circuiting mode using 100% CO₂. When using 75% Argon, 25% CO₂ for short circuit transfer, reduce voltage by 1 to 2 volts.

SUPERGLIDE® S6

Mild Steel, Non-Copper Coated Wire ■ AWS ER70S-6

KEY FEATURES

- High levels of manganese and silicon deoxidizers tolerate medium to heavy mill scale surfaces
- MicroGuard® Ultra provides superior feeding and arc stability
- Supports short-circuiting, globular, axial spray and pulsed spray transfer
- Non-copper coated

WELDING POSITIONS

All

SHIELDING GAS

100% CO₂
 75-95% Argon / Balance CO₂
 95-98% Argon / Balance O₂
 Flow Rate: 30 - 50 CFH

CONFORMANCES

AWS A5.18/A5.18M:	ER70S-6
ASME SFA-A5.18:	ER70S-6
CWB/CSA W48-06:	ER49S-6
EN ISO 14341-B:	G 49A 3 C S6
MIL-E-23765/1:	MIL-70S-6

TYPICAL APPLICATIONS

- Medium to heavy mill scale base material
- Sheet metal to 380 - 485 MPa (55 - 70 ksi) yield strength material
- Automotive repair

DIAMETERS / PACKAGING

Diameter in (mm)	44 lb (20 kg) Fiber Spool	500 lb (227 kg) Accu-Trak® Drum	900 lb (408 kg) Accu-Trak® Drum
0.035 (0.9)	ED028635		ED034560
0.045 (1.1)	ED028636	ED030695	ED034561

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.18/A5.18M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf) @ -29° C (-20° F)
Requirements⁽⁴⁾ – AWS ER70S-6 As-Welded with 100% CO ₂	400 (58) min	485 (70) min	22 min	27 (20) min
Typical Results⁽³⁾ – As-Welded with 100% CO₂	430 (62)	540 (78)	28	71 (52)

WIRE COMPOSITION – As Required per AWS A5.18/A5.18M

	%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	1.42-1.65	0.81-0.87	0.006-0.010	0.004-0.010
	%Cr	%Ni	%Mo	%V	%Cu (Total)
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	0.01-0.04

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁴⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)
0.035 in (0.9 mm), DC+					
Short Circuit Transfer 100% CO ₂ ⁽⁵⁾	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 ₂	12-19 (1/2-3/4)	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)
0.045 in (1.1 mm), DC+					
Short Circuit Transfer 100% CO ₂ ⁽⁵⁾	12-19 (1/2-3/4)	3.2 (125)	19	145	1.5 (3.4)
		3.8 (150)	20	165	1.8 (4.0)
		5.1 (200)	21	200	2.4 (5.4)
Spray Transfer 90% Ar/10% CO ₂	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)

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾CTWD (Contact Tip to Work Distance). Subtract 1/4 in (6.4 mm) to calculate Electrical Stickout.
⁽⁵⁾Procedures in these areas are procedures for short circuiting mode using 100% CO₂. When using 75% Argon, 25% CO₂ for short circuit transfer, reduce voltage by 1 to 2 volts.

SUPERARC® L-50®

Mild Steel, Copper Coated ▪ AWS ER70S-3 & EM13K



KEY FEATURES

- Moderate levels of manganese and silicon for deoxidization of clean to light mill scale surfaces
- Copper coated for long contact tip life
- Supports short-circuiting, globular, axial spray and pulsed spray transfer
- MicroGuard® Ultra provides superior feeding and arc stability

WELDING POSITIONS

All

SHIELDING GAS

100% CO₂
 75-95% Argon / Balance CO₂
 95-98% Argon / Balance O₂
 Flow Rate: 30-50 CFH

CONFORMANCES

AWS A5.18/A5.18M:	ER70S-3
ASME SFA-A5.18:	ER70S-3
AWS A5.17/A5.17M:	EM13K
ABS:	3YSA
Lloyd's Register:	3YS H15
DNV Grade:	III YMS
CWB/CSA W48-06:	ER49S-3
EN ISO 14341-B:	G 49A 2 C S3
MIL-E-23765/1:	MIL-70S-3

TYPICAL APPLICATIONS

- Clean to light mill scale base material
- Pipeline and processing pipe
- Sheet metal to 380 - 485 MPa (55 - 70 ksi) yield strength material
- Pressure vessels
- Structural steel

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Plastic Spool	33 lb (15 kg) Steel Spool	44 lb (20 kg) Steel Spool	44 lb (20 kg) Fiber Spool	60 lb (27.2 kg) Coil
0.030 (0.8)	ED032923	ED031407			
0.035 (0.9)	ED032924	ED031408	ED031914	ED021268	
0.045 (1.1)	ED032925	ED031409	ED031915	ED021270, ED034428*	
0.052 (1.3)			ED031916		ED011317
1/16 (1.6)					
Diameter in (mm)	60 lb (27.2 kg) Fiber Spool	500 lb (227 kg) Accu-Trak® Drum	500 lb (227 kg) Accu-Pak® Box	500 lb (227 kg) Infinity-Pak®	600 lb (272 kg) Speed-Feed® Drum
0.030 (0.8)		ED029223			
0.035 (0.9)	ED021269	ED021052	ED032899		
0.040 (1.0)					
0.045 (1.1)	ED021271	ED020526	ED032901	ED034535	
0.052 (1.3)	ED021273	ED020527	ED032902		
1/16 (1.6)	ED027274		ED032903		ED011316
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	1000 lb (454 kg) Infinity-Pak®
0.030 (0.8)					
0.035 (0.9)	ED032842	ED028825		ED032379	
0.040 (1.0)			ED033292	ED032380	
0.045 (1.1)		ED028826	ED032844	ED031614	ED031930
0.052 (1.3)		ED029082	ED032845	ED031615	ED034464
1/16 (1.6)		ED029083	ED032846	ED033270	

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MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.18/A5.18M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch - J (ft•lbf)	
				@ -18°C (0°F)	@ -29°C (-20°F)
Requirements - AWS ER70S-3 As-Welded with 100% CO ₂	400 (58) min	485 (70) min	22 min	27 (20) min	Not Specified
MIL-70S-3 per MIL-E-23765/1 As-Welded with CO ₂ and 98% Ar/2% O ₂	380-485 (55-70)	485 (70) min	22 min	Not Specified	Not Specified
Typical Results⁽³⁾ As-Welded with 100% CO ₂ Stress Relieved 1 hr. @ 621°C (1150°F)	415 (60) 365 (53)	515 (75) 475 (69)	26 34	95 (70) 118 (87)	88 (65) 100 (74)
As-Welded with 75% Ar/25% CO ₂ Stress Relieved 1 hr. @ 621°C (1150°F)	420 (61) 365 (53)	525 (76) 490 (71)	28 33	106 (78) 165 (122)	102 (75) 163 (120)
As-Welded with 90% Ar/10% CO ₂ Stress Relieved 1 hr. @ 621°C (1150°F)	450 (65) 365 (53)	545 (79) 485 (70)	30 35	142 (105) –	122 (90) 214 (158)
As-Welded with 98% Ar/2% O ₂ Stress Relieved 1 hr. @ 621°C (1150°F)	425 (62) 350 (51)	540 (78) 475 (69)	27 33	108 (80) –	95 (70) 339 (250)

WIRE COMPOSITION – As Required per AWS A5.18/A5.18M

	%C	%Mn	%Si	%S	%P
Requirements - AWS ER70S-3	0.006-0.15	0.90-1.40	0.45-0.75	0.035 max	0.025 max
Typical Results⁽³⁾	0.08-0.11	1.14-1.23	0.53-0.59	0.003-0.009	0.003-0.013
	%Cr	%Mo	%Ni	%V	%Cu (Total) ⁽⁴⁾
Requirements - AWS ER70S-3	0.15 max	0.15 max	0.15 max	0.03 max	0.50 max
Typical Results⁽³⁾	≤ 0.04	≤ 0.02	≤ 0.03	< 0.01	0.15-0.25

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)
0.030 in (0.8 mm), DC+					
Short Circuit Transfer 100% CO ₂	9-12 (3/8-1/2)	1.9 (75)	17	35	0.4 (0.9)
		3.8 (150)	18	70	0.8 (1.8)
		7.6 (300)	22	130	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)	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 ₂	12-19 (1/2-3/4)	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)
0.045 in (1.1 mm), DC+					
Short Circuit Transfer 100% CO ₂ ⁽⁶⁾	12-19 (1/2-3/4)	3.2 (125)	19	145	1.5 (3.4)
		3.8 (150)	20	165	1.8 (4.0)
		5.1 (200)	21	200	2.5 (5.4)
Spray Transfer 90% Ar/10% CO ₂	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)
0.052 in (1.3 mm), DC+					
Spray Transfer 90% Ar/10% CO ₂	12-19 (1/2-3/4)	7.6 (300)	30	300	4.8 (10.6)
		8.1 (320)	30	320	5.2 (11.5)
		12.3 (485)	32	430	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)	25	325	4.8 (10.7)
		6.0 (235)	27	350	5.4 (12.0)
		7.4 (290)	28	430	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% CO₂. When using 75% Argon, 25% CO₂, for short circuit transfer, reduce voltage by 1 to 2 volts.

SUPERARC® L-56®

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



KEY FEATURES

- High levels of manganese and silicon deoxidizers tolerate medium to heavy mill scale surfaces
- Excellent toe-wetting provides optimal bead appearance
- Copper coated 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

CONFORMANCES

AWS A5.18/A5.18M:	ER70S-6
ASME SFA-A5.18:	ER70S-6
AWS A5.17/A5.17M:	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	95-98% Argon / Balance O ₂
75-95% Argon / Balance CO ₂	Flow Rate: 30-50 CFH

DIAMETERS / PACKAGING

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	500 lb (227 kg) Accu-Trak® Drum
0.030 (0.8)					ED030771
0.035 (0.9)	ED021274, ED033704*		ED021275	ED029914	ED021056
0.040 (1.0)	ED027384				ED031937
0.045 (1.1)	ED021276, ED033703*, ED033328**		ED021277	ED029915	ED020532
0.052 (1.3)	ED021278, ED033705*		ED021279	ED029916	ED020533
1/16 (1.6)		ED011666, ED033710*			ED029225, ED033707*, ED036219**
Diameter in (mm)	500 lb (227 kg) Accu-Pak® Box	500 lb (227 kg) Infinity-Pak	900 lb (408 kg) Accu-Pak® Box		
0.035 (0.9)	ED032904	ED034394	ED032847, ED034429*		
0.040 (1.0)					
0.045 (1.1)	ED032906				
0.052 (1.3)	ED032907				
1/16 (1.6)					
Diameter in (mm)	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)	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/A5.18M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf)	
				@ -29°C (-20°F)	@ -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 – As Required per AWS A5.18/A5.18M

	%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)	17	35	0.4 (0.9)
		6.4 (250)	19	80	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)	17	35	0.4 (0.9)
		3.8 (150)	18	70	0.8 (1.8)
		7.6 (300)	22	130	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)	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 ₂	12-19 (1/2-3/4)	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)
0.045 in (1.1 mm), DC+					
Short Circuit Transfer 100% CO ₂ ⁽⁶⁾	12-19 (1/2-3/4)	3.2 (125)	19	145	1.5 (3.4)
		3.8 (150)	20	165	1.8 (4.0)
		5.1 (200)	21	200	2.5 (5.4)
Spray Transfer 90% Ar/10% CO ₂	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)
0.052 in (1.3 mm), DC+					
Spray Transfer 90% Ar/10% CO ₂	12-19 (1/2-3/4)	7.6 (300)	30	300	4.8 (10.7)
		8.1 (320)	30	320	5.2 (11.5)
		12.3 (485)	32	430	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)	27	325	4.8 (10.7)
		6.0 (235)	28	350	5.4 (12.0)
		7.4 (290)	29	430	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% CO₂. When using 75% Argon, 25% CO₂, for short circuit transfer, reduce voltage by 1 to 2 volts.

SUPERARC® L-59®

Mild Steel, Copper Coated ■ AWS ER70S-6



KEY FEATURES

- High deposition rates similar to metal-cored wire
- Minimal spatter
- Engineered alloy system enhances silicon island management
- Copper coated for long contact tip life
- Fast travel speeds
- MicroGuard® Ultra provides superior feeding and arc stability

WELDING POSITIONS

All

SHIELDING GAS

100% CO₂
 75-95% Argon / Balance CO₂
 95-98% Argon / Balance O₂
 Flow Rate: 30 - 50 CFH

CONFORMANCES

AWS A5.18/A5.18M:	ER70S-6
ASME SFA-A5.18:	ER70S-6
ABS:	3YSA (100 CO ₂ & Mixed)
DNV Grade:	III YMS H5 (Mixed)
BV Grade:	SA3YHHH (Mixed)
CWB/CSA W48-06:	ER49S-6
EN ISO 14341-B:	G 49A 3 C S6

TYPICAL APPLICATIONS

- Robotic or hard automation
- Automotive
- Pipeline & Offshore
- Pressure vessels
- Heavy fabrication
- Alternative to metal-cored wire

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (14.9 kg) Plastic Spool	44 lb (20 kg) Fiber Spool	44 lb (20 kg) Steel Spool	60 lb (27.2 kg) Fiber Spool	500 lb (227 kg) Accu-Pak® Box
0.035 (0.9)	ED034270	ED033033	ED032366		ED032894
0.040 (1.0)					ED032895
0.045 (1.1)	ED034271		ED032367		ED032896
0.052 (1.3)	ED034272	ED034430*	ED032368	ED032814	ED032897
1/16 (1.6)	ED034356	ED036220**	ED032968		
Diameter in (mm)	500 lb (227 kg) Infinity-Pak®	900 lb (408 kg) Accu-Pak® Box	1000 lb (454 kg) Infinity-Pak®	1000 lb (454 kg) Accu-Pak® Box	1000 lb (454 kg) Precise-Trak® Reel
0.035 (0.9)	ED034402	ED032861			
0.040 (1.0)					
0.045 (1.1)			ED033215	ED032863	ED032808
0.052 (1.3)				ED032864, ED034431*	ED032809
1/16 (1.6)				ED032865	

*Buy America Product **Tested Material

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.18/A5.18M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf)	
				@ -29°C (-20°F)	@ -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
Typical Results⁽³⁾ As-Welded with 100% CO ₂	455 (66)	565 (82)	28	71 (52)	53 (39)
As-Welded with 75% Ar/25% CO ₂	485 (70)	595 (86)	25	56 (41)	53 (39)
As-Welded with 90% Ar/10% CO ₂	460 (67)	570 (83)	25	75 (55)	65 (48)

WIRE COMPOSITION – As Required per AWS A5.18/A5.18M

	%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
	%Cu ⁽⁴⁾	%Ni	%Cr	%Mo	%V
Requirements - AWS ER70S-6	0.50 max	0.15 max	0.15 max	0.15 max	0.03 max

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)
0.035 in (0.9 mm), DC+					
Short Circuit Transfer 75% Ar/25% CO ₂ ⁽⁶⁾	12 (1/2)	2.5 (100)	17	80	0.7 (1.6)
		3.8 (150)	18	120	1.1 (2.4)
		6.4 (250)	20	175	1.8 (4.0)
Spray Transfer 90% Ar/10% CO ₂	19 (3/4)	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)
0.045 in (1.1 mm), DC+					
Short Circuit Transfer 75% Ar/25% CO ₂ ⁽⁶⁾	12 (1/2)	3.2 (125)	18	145	1.5 (3.4)
		3.8 (150)	19	165	1.8 (4.0)
		5.1 (200)	20	200	2.4 (5.4)
Spray Transfer 90% Ar/10% CO ₂	19 (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)
0.052 in (1.3 mm), DC+					
Spray Transfer 90% Ar/10% CO ₂	19 (3/4)	7.6 (300)	30	300	4.8 (10.6)
		8.1 (320)	30	320	5.2 (11.5)
		12.3 (485)	32	430	7.8 (17.1)
1/16 in (1.6 mm), DC+					
Spray Transfer 90% Ar/10% CO ₂	19 (3/4)	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)

⁽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 75% Argon, 25% CO₂. NOTE: For 100% CO₂ procedures, add 1 to 2 volts for short circuit transfer and 2 to 3 volts for globular transfer.

SUPERARC® LA-75

Low Alloy, Copper Coated ■ AWS ER80S-Ni1 & ENi1K



KEY FEATURES

- Capable of producing weld deposits with 550 MPa (80 ksi) tensile strength
- High toughness at low temperatures with a nominal 1% Ni or less
- MicroGuard® Ultra provides superior feeding and arc stability
- Supports short-circuiting, globular, axial spray and pulsed spray transfer

WELDING POSITIONS

All

SHIELDING GAS

75-95% Argon / Balance CO₂

95-98% Argon / Balance O₂

Flow Rate: 30 - 50 CFH

CONFORMANCES

AWS A5.28/A5.28M:	ER80S-Ni1
ASME SFA-A5.28:	ER80S-Ni1
AWS A5.17/A5.17M:	ENi1K
ABS:	ER80S-Ni1
CWB/CSA W48-06:	ER55S-Ni1 (ER80S-Ni1)
EN ISO 14341-B:	G 55A 4 A SN2

TYPICAL APPLICATIONS

- ASTM A588 weathering steel requiring good atmospheric corrosion resistance
- NACE applications

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Steel Spool
0.035 (0.9)	ED031415, ED033949**
0.045 (1.1)	ED031416, ED034432*

*Buy America Product. **Q2 Tested Product.

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.28/A5.28M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf)		
				@ -29°C (-20°F)	@ -45°C (-50°F)	@ -62°C (-80°F)
Requirements – AWS ER80S-Ni1 As-Welded with 98% Ar/2% O ₂	470 (68) min	550 (80) min	24 min	Not Specified	27 (20) min	Not Specified
Typical Results⁽³⁾ As-Welded with 90% Ar/10% CO ₂	475 (69)	580 (84)	28	119 (88)	82 (60)	35 (26)
Stress Relieved 1 hr. @ 621°C (1150° F)	450 (65)	565 (82)	32	- -	127 (93)	112 (82)
As-Welded with 75% Ar/25% CO ₂	495 (72)	595 (86)	27	49 (36)	54 (40)	- -
Stress Relieved 1 hr. @ 621°C (1150° F)	440 (64)	560 (81)	31	127 (94)	114 (84)	54 (40)
As-Welded with 98% Ar/2% O ₂	490 (71)	580 (84)	30	- -	172 (127)	- -
Stress Relieved 1 hr. @ 621°C (1150° F)	420 (61)	540 (78)	31	- -	230 (170)	165 (122)

WIRE COMPOSITION – As Required per AWS A5.28/A5.28M

	%C	%Mn	%Si	%Ni	%Cr
Requirements – AWS ER80S-Ni1	0.12 max	1.25 max	0.40-0.80	0.80-1.10	0.15 max
Typical Results⁽³⁾	0.07-0.08	0.94-1.04	0.54-0.58	0.88-0.98	≤ 0.04
	%Mo	%S	%P	%V	%Cu (Total) ⁽⁴⁾
Requirements – AWS ER80S-Ni1	0.35 max	0.025 max	0.025 max	0.05 max	0.35 max
Typical Results⁽³⁾	≤ 0.02	0.007 - 0.010	0.005 - 0.010	< 0.01	0.16 - 0.21

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)
0.035 in (0.9 mm), DC+					
Short Circuit Transfer 75% Ar/25% CO ₂ ⁽⁶⁾	9-12 (3/8-1/2)	2.5 (100)	17	80	0.7 (1.6)
		3.8 (150)	18	120	1.1 (2.4)
		6.4 (250)	22	175	1.8 (4.0)
Spray Transfer 90% Ar/10% CO ₂	12-19 (1/2-3/4)	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)
0.045 in (1.1 mm), DC+					
Short Circuit Transfer 75% Ar/25% CO ₂ ⁽⁶⁾	12-19 (1/2-3/4)	3.2 (125)	19	145	1.5 (3.4)
		3.8 (150)	20	165	1.8 (4.0)
		5.1 (200)	21	200	2.4 (5.4)
Spray Transfer 90% Ar/10% CO ₂	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)

⁽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 the shaded areas are procedures for short circuiting mode using 75% Argon, 25% CO₂. NOTE: For 100% CO₂ procedures, add 1 to 2 volts for short circuit transfer and 2 to 3 volts for globular transfer.

SUPERARC® LA-90

Low Alloy, Copper Coated ■ AWS ER80S-D2, ER90S-D2 & EA3K

KEY FEATURES

- Capable of producing weld deposits with 550 - 620 MPa (80 - 90 ksi) tensile strength
- Contains 0.50% molybdenum for strength after stress-relief
- MicroGuard® Ultra provides superior feeding and arc stability
- Supports short-circuiting, globular, axial spray and pulsed spray transfer

WELDING POSITIONS

All

SHIELDING GAS

100% CO₂
 75-95% Argon / Balance CO₂
 95-98% Argon / Balance O₂
 Flow Rate: 30 - 50 CFH

CONFORMANCES

AWS A5.28/A5.28M:	ER80S-D2 (100% CO ₂), ER90S-D2 (Mixed)
ASME SFA-A5.28:	ER80S-D2 (100% CO ₂), ER90S-D2 (Mixed)
AWS A5.23/A5.23M:	EA3K
CWB/CSA W48-06:	ER55S-D2 (ER80S-D2), ER62S-D2 (ER90S-D2)
EN ISO 16484-B:	G 59A 3 C 4M31
EN ISO 16834-B:	G 62A 3 A 4M31
MIL-E-23765/2:	MIL-80S-3

TYPICAL APPLICATIONS

- Requirements for strength after stress relieving
- ASTM A182, A217, A234 and A335 high temperature service pipe, fittings, flanges and valves
- ASTM A336 pressure vessel forgings

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Steel Spool	44 lb (20 kg) Steel Spool	44 lb (20 kg) Fiber Spool	
0.035 (0.9)	ED031413	EDS30775	ED029546	
0.045 (1.1)	ED031414	EDS30776		
0.052 (1.3)		EDS30777		
1/16 (1.6)				
Diameter in (mm)	60 lb (27.2 kg) Coil	60 lb (27.2 kg) Fiber Spool	500 lb (227 kg) Accu-Trak® Drum	
0.035 (0.9)			EDS01372	
0.045 (1.1)		EDS01380	ED001378	
0.052 (1.3)			ED026627	
1/16 (1.6)	ED013999			
Diameter in (mm)	500 lb (227 kg) Accu-Pak® Box	1000 lb (454 kg) Accu-Trak® Drum	1000 lb (454 kg) Accu-Pak® Box	1000 lb (454 kg) Infinity-Pak®
0.035 (0.9)		EDS29590		
0.045 (1.1)	ED032919	ED029591	ED034436	
0.052 (1.3)	ED032920	EDS29592		ED034955
1/16 (1.6)				

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.28/A5.28M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf)	
				@ -29°C (-20°F)	@ -40°C (-40°F)
Requirements - AWS ER80S-D2 As-Welded with 100% CO ₂	470 (68) min	550 (80) min	17 min	27 (20) min	Not Specified
AWS ER90S-D2 As-Welded with 95-99% Ar/Balance O ₂	540 (78) min	620 (90) min	17 min	27 (20) min	Not Specified
Typical Results⁽³⁾					
As-Welded with 100% CO ₂	560 (81)	655 (95)	23	36 (26)	- -
As-Welded with 95% Ar/5% O ₂	650 (94)	730 (106)	25	125 (92)	- -
As-Welded with 75% Ar/25% CO ₂	620 (90)	705 (102)	26	124 (91)	122 (90)

WIRE COMPOSITION – As Required per AWS A5.28/A5.28M

	%C	%Mn	%Si	%Ni
Requirements - AWS ER80S-D2, ER90S-D2	0.07-0.12	1.60-2.10	0.50-0.80	0.15 max
Typical Results⁽³⁾	0.09-0.11	1.63-1.74	0.56-0.64	≤ 0.04
	%Mo	%S	%P	%Cu (Total) ⁽⁴⁾
Requirements - AWS ER80S-D2, ER90S-D2	0.40-0.60	0.025 max	0.025 max	0.50 max
Typical Results⁽³⁾	0.43-0.46	≤ 0.010	0.007-0.016	0.16-0.22

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)
0.035 in (0.9 mm), DC+					
Short Circuit Transfer 75% Ar/25% CO ₂ ⁽⁶⁾	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 ₂	12-19 (1/2-3/4)	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)
0.045 in (1.1 mm), DC+					
Short Circuit Transfer 75% Ar/25% CO ₂ ⁽⁶⁾	12-19 (1/2-3/4)	3.2 (125)	19	145	1.5 (3.4)
		3.8 (150)	20	165	1.8 (4.0)
		5.1 (200)	21	200	2.5 (5.4)
Spray Transfer 90% Ar/10% CO ₂	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)
0.052 in (1.3 mm), DC+					
Spray Transfer 90% Ar/10% CO ₂	12-19 (1/2-3/4)	7.6 (300)	30	300	4.8 (10.6)
		8.1 (320)	30	320	5.2 (11.5)
		12.3 (485)	32	430	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)	25	325	4.8 (10.7)
		6.0 (235)	27	350	5.4 (12.0)
		7.4 (290)	28	430	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 75% Argon, 25% CO₂. NOTE: For 100% CO₂ procedures, add 1 to 2 volts for short circuit transfer and 2 to 3 volts for globular transfer.

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
- MicroGuard® Ultra provides superior feeding and arc stability
- Supports short-circuiting, globular, axial spray and pulsed spray transfer

WELDING POSITIONS

All

SHIELDING GAS

90-95% Argon / Balance CO₂
 95-98% Argon / Balance O₂
 Flow Rate: 30 - 50 CFH

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
0.035 (0.9)	ED031417	EDS30778	ED010996	ED031445
0.045 (1.1)		EDS30779		EDS01162
1/16 (1.6)				

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.28/A5.28M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf)	
				@ -18°C (0°F)	@ -51°C (-60°F)
Requirements - 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 ₂	565-825 (82-120)	Not Specified	16 min.	81 (60) min	47 (35) min
Typical Results⁽³⁾					
As-Welded at 30 kJ/in with 95% Ar/5% CO ₂	750 (109)	790 (115)	22	164 (121)	138 (102)
As-Welded at 45 kJ/in with 98% Ar/2% O ₂	730 (106)	780 (114)	20	- -	118 (87)
Pulse					
As-Welded at 110 kJ/in with 95% Ar/5% CO ₂	580 (84)	745 (108)	25	138 (102)	70 (52)
CV					
As-Welded at 110 kJ/in with 95% Ar/5% CO ₂	620 (90)	740 (107)	25	170 (125)	106 (78)
As-Welded at 45 kJ/in with 95% Ar/5% CO ₂	682 (99)	765 (111)	20	- -	117 (86)

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

CONFORMANCES

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

WIRE COMPOSITION – As Required per AWS A5.28/A5.28M

	%C	%Mn	%Si	%Ni	%Mo
Requirements - AWS ER100S-G, ER110S-G	-	-	-	(A)	(A)
Typical Results ⁽³⁾	0.05-0.06	1.63-1.69	0.46-0.50	1.88-1.96	0.43-0.45
	%Cr	%S	%P	%V	
Requirements - AWS ER100S-G, ER110S-G	(A)	-	-	-	
Typical Results ⁽³⁾	0.04-0.06	0.002-0.005	0.005-0.009	≤ 0.01	
	%Al	%Ti	%Zr	%Cu	
Requirements - AWS ER100S-G, ER110S-G	-	-	-	-	
Typical Results ⁽³⁾	≤ 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 ⁽⁴⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)
0.035 in (0.9 mm), DC+					
Short Circuit Transfer 90% Ar/25% CO ₂	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 ₂	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)
0.045 in (1.1 mm), DC+					
Pulsed Spray Transfer ⁽⁵⁾	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 ₂ 95% Ar/5% CO ₂	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)
0.052 in (1.3 mm), DC+					
Spray Transfer 98% Ar/2% O ₂ 95% Ar/5% CO ₂	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)

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾CTWD (Contact Tip to Work Distance). Subtract 1/4 in (6.4 mm) to calculate Electrical Stickout.

⁽⁵⁾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.

SUPERARC® AK-10®

Low Alloy, Copper Coated ■ AWS ER100S-G

KEY FEATURES

- Capable of producing welds with 690 MPa (100 ksi) tensile strength
- Suitable for use where consumables with less than 1% Ni are required
- Batch Managed Inventory
- Superior feeding and arc stability
- Q2 Lot® - Certificates showing actual wire chemistry available online

WELDING POSITIONS

All

SHIELDING GAS

- 100% CO₂
- 75-95% Argon / Balance CO₂
- 95-98% Argon / Balance O₂
- Flow rate: 30-50CFH

CONFORMANCES

AWS A5.28/A5.28M: ER100S-G

ASME SFA-5.28: ER100S-G

TYPICAL APPLICATIONS

- NACE applications
- Oil tools
- Riser systems
- High-strength pipe

TYPICAL BASE METALS

HY-80 or HY-100 per MIL-S-16216, A514 Grade B or P, AISI 4130 or 8620, API X-70 or X-80

DIAMETERS / PACKAGING

Diameters in (mm)	33 lb. (15kg) Steel Spool	500 lb. (227kg) Accu-Trak® Drum
0.035 (0.9)	ED034894	ED034896
0.045 (1.1)	ED034895	ED034897

MECHANICAL PROPERTIES – As Required per AWS A5.28/A5.28M

	Yield Strength ⁽¹⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft-lbf)	
				-40 °C (40 °F)	-51 °C (60 °F)
Requirements AWS A5.28: ER100S-G As-Welded with 90% Ar/10% CO ₂	Not Specified	690 (100) min	Not Specified	Not Specified	Not Specified
Typical Results As-Welded with 90% Ar/10% CO ₂	709 (103)	802 (116)	21	86 (64)	85 (63)
Stress Relieved 1 hr. @ 621 °C (1150 °F) with 90% Ar/10% CO ₂	627 (91)	723 (105)	25	113 (83)	100 (73)

(1) Measured with a 0.2% offset.

WIRE COMPOSITION – As Required per AWS A5.28/A5.28M

	%C	%Mn	%Si	%Ni
Requirements - AWS A5.28: ER100S-G	–	–	–	(A)
Typical Results	0.10	1.55	0.57	0.88
	%Mo	%Cr	%S	%P
Requirements - AWS A5.28: ER100S-G	(A)	(A)	–	–
Typical Results	0.47	0.28	< 0.005	0.01
	%V	%Al	%Cu	
Requirements - AWS A5.28: ER100S-G	–	–	–	
Typical Results	< 0.003	0.003	0.12	

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

2CRMO

Low Alloy Steel ■ AWS ER90S-G

KEY FEATURES

- Designed for high strength and improved hardness to resist metal-to-metal wear
- Developed to provide corrosion resistance to Sulphur bearing crude oil
- Superior feedability

WELDING POSITIONS

All

SHIELDING GAS

95% Argon / 5% CO₂

CONFORMANCES

AWS 5.28 ER90S-G
BS EN ISO 21952-A CrMo2Si

TYPICAL APPLICATIONS

- Steam Generating Power Plant
- Piping
- Coal Liquefaction Plant
- NH₃ Pressure Vessels

DIAMETERS / PACKAGING

Diameter mm (in)	15 kg (33.1 lb) Spool
0.8 (0.035)	M2CRMO-08
1.2 (0.045)	M2CRMO-12

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.28

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @-10 °C (14 °F)	Hardness HV
Requirements AWS ER90S-G	540 (78) min	620 (90) min	17 min	-	-
Typical Results⁽³⁾ As-Welded	540 (78)	655 (95)	23	>95	220

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.28

	%C	%Mn	%Si	%S	%P
Requirements AWS ER90S-G	0.06-0.12	0.80-1.20	0.50-0.80	0.02 max	0.02 max
Typical Results⁽³⁾	0.1	1	0.6	0.01	0.015
	%Cr	%Ni	%Mo	%Cu	
Requirements AWS ER90S-G	2.30-2.70	-	0.90-1.10	0.4 max	
Typical Results⁽³⁾	2.4	<0.1	1	0.15	

TYPICAL OPERATING PROCEDURES

Diameter mm (in)	Polarity	Amperage	Voltage
1.2 (0.045)	DC+	280A	26V

⁽¹⁾ Typical all weld metal ⁽²⁾ Measured with 0.2% offset ⁽³⁾ See test results disclaimer

ER90S-B3

Low Alloy Steel ■ AWS ER90S-B3

KEY FEATURES

- Developed for 2 ¼ Cr-1Mo creep resisting steels
- Design for high strength and improved hardness to resist metal-to-metal wear
- Superior feedability

WELDING POSITIONS

All

SHIELDING GAS

95% Argon / 5% CO₂

CONFORMANCES

AWS 5.28	ER90S-B3
BS EN ISO 21952-B	2C1M

TYPICAL APPLICATIONS

- Steam Generating Power Plant
- Piping
- Coal Liquefaction Plant
- NH₃ Pressure Vessels

DIAMETERS / PACKAGING

Diameter mm (in)	15 kg (33.1 lb) Spool
1.2 (.045)	MER90SB3-12

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.28

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @-10°C (14°F)	Hardness HV
Requirements AWS ER90S-B3	540 (78) min	620 (90) min	17 min	-	-
Typical Results⁽³⁾ As-Welded	540 (78)	655 (95)	23	>95	220

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.28

	%C	%Mn	%Si	%S	%P
Requirements AWS ER90S-B3	0.07-0.12	0.40-0.70	0.40-0.70	0.02 max	0.02 max
Typical Results⁽³⁾	0.1	0.5	0.5	0.01	0.015
	%Cr	%Ni	%Mo	%Cu	
Requirements AWS ER90S-B3	2.3-2.7	0.20 max	0.9-1.2	0.35 max	
Typical Results⁽³⁾	2.4	<0.1	1	0.1	

TYPICAL OPERATING PROCEDURES

Diameter mm (in)	Polarity	Amperage	Voltage
1.2 (0.045)	DC+	280A	26V

⁽¹⁾ Typical all weld metal ⁽²⁾ Measured with 0.2% offset ⁽³⁾ See test results disclaimer

TECHALLOY® 4130

Low Alloy Steel

KEY FEATURES

- High strength, low alloy
- Preheat and inter-pass temperature of 400°F is required

TYPICAL APPLICATIONS

- Joining steels of similar chemical composition
- Overlays where moderate hardness is required

WELDING POSITIONS

All

DIAMETERS / PACKAGING

Diameter in (mm)	MIG 33 lb (15 kg) Steel Spool
0.035 (0.9)	MG4130035659
0.045 (1.1)	MG4130045659
1/16 (1.6)	MG4130062659

WIRE COMPOSITION⁽¹⁾

	%C	%Mn	%Si	%Fe	%Cr	%Mo	%Ni	%V
Typical Results ⁽³⁾	0.31	0.52	0.28	Balance	0.93	0.20	-	-

MECHANICAL PROPERTIES⁽¹⁾

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %
Typical Results ⁽³⁾	130,000 (900)	145,000 (1,000)	11

TYPICAL OPERATING PROCEDURES

Process	Diameter in (mm)	Voltage (volts)	Amperage	Gas
MIG – Spray Transfer	0.035 (0.9)	28-32	165-200	98% Ar / 2% O ₂
	0.045 (1.1)	30-34	180-220	
	1/16 (1.6)	30-34	230-260	
MIG – Short Circuit Transfer	0.035 (0.9)	22-25	100-140	75% Ar / 2% O ₂
	0.045 (1.1)	23-26	120-150	
MIG - Globular	-	-	-	100% CO ₂

⁽¹⁾Typical deposit composition. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer. Safety Data Sheets (SDS) are available on our website at www.lincolnelectric.com