

METALSHIELD® CLARITY™ MC® -707

Mild Steel ■ AWS E70C-6M H4

KEY FEATURES

- Over 40% reduction in Manganese Generation Rate when compared to a conventional E70C-6M electrode
- Assists efforts to reduce exposure to Manganese
- H4 diffusible hydrogen levels
- High deposition rates and fast travel speeds
- Superior arc wetting and bead appearance

WELDING POSITIONS

Flat & Horizontal

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Fiber Spool
0.045 (1.1)	ED036370
0.052 (1.3)	ED036371
1/16 (1.6)	ED036372

CONFORMANCES

AWS A5.18/A5.18M:	E70C-6M-H4
AWS A5.36/A5.36M:	E70T15-M20A4-CS1-H4
CWB/CSA W48-06:	E492C-6M-H4

TYPICAL APPLICATIONS

- Robotics/hard automation
- Structural fabrication
- General fabrication

SHIELDING GAS

90% Ar, 10% CO₂
Flow rate: 40-60 CFH

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 A5.18: E70C-6M-H4	400 (58) min	480 (70) min	22 min	27 (20) min	-
AWS A5.36: E70T15-M20A4-CS1-H4	400 (58) min	490-660 (70-95)	22 min	-	27 (20) min
Typical Results⁽³⁾ As-Welded with 75% Ar / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Ar / 10% CO ₂	440-480 (64-70) 440-500 (64-72)	520-565 (75-82) 525-570 (76-83)	24-31 28-32	30-74 (22-55) 84-149 (62-110)	- 39-146 (23-108)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.18/A5.18M

	%C	%Mn	%Si	%S	%P	%Cu
Requirements - AWS A5.18: E70C-6M-H4	0.12 max	1.75 max	0.90 max	0.03 max	0.03 max	0.50 max
AWS A5.36: E70T15-M20A4-CS1-H4				0.030 max	0.030 max	
Typical Results⁽³⁾ As-Welded with 75% Ar / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Ar / 10% CO ₂	0.03-0.05 0.04-0.06	0.60-0.67 0.61-0.70	0.57-0.65 0.61-0.64	0.011-0.014 0.011-0.013	0.005-0.007 0.005-0.006	0.04-0.05 0.04-0.06
	%Ni	%Cr	%Mo	%V	%B	Diffusible Hydrogen (mL/100g weld deposit)
Requirements - AWS A5.18: E70C-6M-H4	0.50 max	0.20 max	0.30 max	0.08 max	Not Specified	4.0 max
AWS A5.36: E70T15-M20A4-CS1-H4						4 max
Typical Results⁽³⁾ As-Welded with 75% Ar / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Ar / 10% CO ₂	0.02-0.03 0.02	0.03-0.04 0.03-0.04	0.02 0.02	<0.01 <0.01	0.002-0.003 0.003	1-2 1

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Required gas mixture 75-80% Argon/Balance CO₂ for AWS testing.

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁵⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage ⁽⁶⁾ (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
0.045 in (1.1 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	21-23	150	2.3 (5.1)	2.1 (4.7)	94-99
		6.4 (250)	22-24	175	2.9 (6.4)	2.7 (6.0)	
		7.6 (300)	22-25	190	3.4 (7.6)	3.3 (7.3)	
		8.9 (350)	23-26	215	4.0 (8.9)	3.9 (8.5)	
		10.2 (400)	24-27	235	4.6 (10.2)	4.5 (9.8)	
		11.4 (450)	24-28	260	5.2 (11.5)	5.0 (11.1)	
		12.7 (500)	24-28	270	5.8 (12.7)	5.6 (12.4)	
		14.0 (550)	25-28	290	6.4 (14.0)	6.2 (13.6)	
		15.2 (600)	25-30	300	6.9 (15.3)	6.8 (14.9)	
		16.5 (650)	26-30	320	7.5 (16.6)	7.3 (16.2)	
17.8 (700)	26-31	325	8.1 (17.8)	7.9 (17.5)			
0.052 in (1.3 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	22-25	200	3.1 (6.8)	2.9 (6.4)	94-99
		6.4 (250)	22-25	230	3.9 (8.5)	3.7 (8.2)	
		7.6 (300)	23-26	255	4.6 (10.2)	4.5 (9.9)	
		8.9 (350)	24-27	285	5.4 (11.9)	5.3 (11.6)	
		10.2 (400)	24-28	310	6.2 (13.6)	6.1 (13.4)	
		11.4 (450)	25-28	340	6.9 (15.3)	6.8 (15.1)	
		12.7 (500)	27-29	365	7.7 (17.0)	7.6 (16.8)	
		14.0 (550)	28-30	390	8.4 (18.6)	18.5 (18.6)	
1/16 in (1.6 mm), DC+ 90% Argon / 10% CO ₂	25-32 (1-1 1/4)	3.8 (150)	22-24	215	3.1 (6.9)	2.9 (6.3)	94-99
		5.1 (200)	22-25	260	4.2 (9.2)	4.0 (8.7)	
		6.4 (250)	23-27	295	5.2 (11.5)	5.0 (11.1)	
		7.6 (300)	24-28	350	6.2 (13.7)	6.1 (13.5)	
		8.9 (350)	26-30	375	7.3 (16.0)	7.2 (15.9)	
		10.2 (400)	26-30	425	8.3 (18.3)	8.3 (18.3)	
		11.4 (450)	27-31	460	9.3 (20.6)	9.4 (20.7)	

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer. ⁽⁴⁾Required gas mixture 75-80% Argon/Balance CO₂ for AWS testing. ⁽⁵⁾To estimate ESO, subtract 3/16 in (4.8 mm) from CTWD. ⁽⁶⁾For greater percentage of CO₂ shielding gas, increase voltage by 1-2 volts. NOTE: This product contains micro-alloying elements. Additional information available upon request.

METALSHIELD® MC-6®

Mild Steel ■ AWS E70C-6M H4

KEY FEATURES

- Excellent performance in fast follow, high travel speed applications
- Optimal wetting action, even at low voltages
- H4 diffusible hydrogen level
- Use with Rapid-Arc® Waveform Control Technology® for increased travel speeds
- Deoxidizing arc action minimizes pre-weld work

WELDING POSITIONS

All

SHIELDING GAS

75-95% Argon / Balance CO₂
Flow Rate: 40-60 CFH

CONFORMANCES

AWS A5.18, ASME SFA-5.18: E70C-6M-H4
AWS A5.36, ASME SFA-5.36: E70T15-M20A4-CS1-H4,
 E70T15-M21A4-CS1-H4
CWB/CSA W48-06: E491C-6MJ-H4

TYPICAL APPLICATIONS

- Robotics/Hard automation
- Automotive
- Structural fabrication
- Process piping and pressure vessels
- General fabrication

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Steel Spool	50 lb (22.7 kg) Fiber Spool	60 lb (27.2 kg) Coil	500 lb (227 kg) Accu-Trak® Drum
0.045 (1.1)	ED030392	ED030554	ED030549	ED031011
0.052 (1.3)	ED030393	ED030556	ED030550	ED030946
1/16 (1.6)	ED030394	ED030555	ED030577	ED030947

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.18/A5.36

	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 A5.18: E70C-6M-H4 AWS A5.36: E70T15-M20A4-CS1-H4	400 (58) min	480 (70) min 490-660 (70-95)	22 min	27 (20) min	Not Specified
Typical Results⁽³⁾					
As-Welded with 75% Argon / 25% CO ₂ ⁽⁴⁾	450-510 (65-75)	510-590 (75-85)	24-28	81-122 (60-90)	47-75 (35-55)
As-Welded with 90% Argon / 10% CO ₂	480-550 (70-80)	550-620 (80-90)	24-28	75-102 (55-75)	61-81 (45-60)

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Required gas mixture 75-80% Argon/Balance CO₂ for AWS testing.

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.18/A5.36

	%C	%Mn	%Si	%S	%P	%Cu
Requirements – AWS A5.18: E70C-6M-H4 AWS A5.36: E70T15-M20A4-CS1-H4	0.12 max	1.75 max	0.90 max	0.03 max 0.030 max	0.03 max 0.030 max	0.50 max 0.035 max
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Argon / 10% CO ₂	0.03-0.05 0.03-0.05	1.25-1.60 1.25-1.70	0.40-0.60 0.40-0.70	0.01-0.02 0.01-0.02	0.01-0.02 0.01-0.02	0.01-0.05 0.01-0.05
	%Ni	%Cr	%Mo	%V	%Ni + %Cr + %Mo + %V	Diffusible Hydrogen (mL/100g weld deposit)
Requirements – AWS A5.18: E70C-6M-H4 AWS A5.36: E70T15-M20A4-CS1-H4	0.50 max	0.20 max	0.30 max	0.08 max	0.50 max	4.0 max 4 max
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Argon / 10% CO ₂	0.02-0.05 0.02-0.05	0.01-0.04 0.01-0.04	0.01-0.02 0.01-0.02	0.01-0.02 0.01-0.02	0.05-0.10 0.05-0.10	2-4

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁵⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage ⁽⁶⁾ (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
0.045 in (1.1 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	21-23	170	2.5 (5.6)	2.3 (5.2)	92
		6.4 (250)	22-25	190	2.9 (6.4)	2.7 (6.1)	95
		7.6 (300)	22-26	210	3.5 (7.8)	3.2 (7.1)	92
		8.9 (350)	22-27	245	4.1 (9.1)	3.9 (8.7)	95
		10.2 (400)	23-27	265	4.6 (10.2)	4.5 (9.9)	97
		12.7 (500)	23-28	300	5.7 (12.6)	5.6 (12.4)	98
		15.2 (600)	25-29	335	7.0 (15.4)	6.9 (15.3)	99
		17.8 (700)	26-30	370	8.1 (17.8)	7.9 (17.5)	98
0.052 in (1.3 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	22-24	220	3.2 (7.0)	2.9 (6.4)	92
		6.4 (250)	22-26	260	4.0 (8.7)	3.8 (8.3)	95
		7.6 (300)	22-27	300	4.9 (10.7)	4.7 (10.3)	96
		8.9 (350)	23-27	335	5.6 (12.3)	5.5 (12.0)	98
		10.2 (400)	24-28	360	6.3 (13.9)	6.3 (13.8)	99
		12.7 (500)	27-30	410	7.9 (17.4)	7.8 (17.3)	99
		15.2 (600)	27-31	455	9.5 (21.1)	9.4 (20.8)	99
1/16 in (1.6 mm), DC+ 90% Argon / 10% CO ₂	25-32 (1-1 1/4)	2.5 (100)	21-24	175	2.1 (4.7)	2.0 (4.4)	93
		3.8 (150)	22-25	235	3.2 (7.1)	2.9 (6.4)	90
		5.1 (200)	22-26	290	4.3 (9.5)	4.0 (8.9)	94
		6.4 (250)	22-28	345	5.4 (11.9)	5.2 (11.4)	96
		7.6 (300)	23-29	360	6.4 (14.2)	6.3 (13.9)	98
		10.2 (400)	26-31	425	8.5 (18.7)	8.4 (18.5)	99
		12.7 (500)	27-32	485	10.8 (23.8)	10.7 (23.5)	99

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Required gas mixture 75-80% Argon/Balance CO₂ for AWS testing.

⁽⁵⁾To estimate ESO, subtract 3/16 in (4.8 mm) from CTWD. ⁽⁶⁾For greater percentage of CO₂ shielding gas, increase voltage by 1-2 volts.

METALSHIELD® MC® -706

Mild Steel ■ AWS E70C-6M H4

KEY FEATURES

- High deposition rates and travel speed
- Enhanced silicon island management
- H4 diffusible hydrogen level
- Tolerates high amounts of surface contaminants
- Superior arc wetting and bead appearance

WELDING POSITIONS

Flat & Horizontal

SHIELDING GAS

75-95% Argon / Balance CO₂
Flow Rate: 40-60 CFH

CONFORMANCES

AWS A5.18, ASME SFA-5.18: E70C-6M-H4
AWS A5.36, ASME SFA-5.36: E70T15-M20A4-CS1-H4,
 E70T15-M21A4-CS1-H4
ABS: E70C-6M H4
CWB/CSA W48-06: E492C-6MJ-H4
EN ISO 17632-B T49T15-OMA-H5
AWS D1.8

TYPICAL APPLICATIONS

- Robotics/hard automation
- Structural fabrication
- Process piping and pressure vessels
- Shipbuilding
- Heavy fabrication

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Steel Spool	50 lb (22.7 kg) Fiber Spool	50 lb (22.7 kg) Coil	500 lb (227 kg) Accu-Trak® Drum
0.045 (1.1)	ED031583	ED031586	ED031589	ED031592
0.052 (1.3)	ED031584	ED031587	ED031590	ED031593
1/16 (1.6)	ED031585	ED031588	ED031591	ED031594

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.18/A5.36

	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 A5.18: E70C-6M-H4 AWS A5.36: E70T15-M20A4-CS1-H4	400 (58) min	480 (70) min 490-660 (70-95)	22 min	27 (20) min Not Specified	Not Specified 27 (20) min
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Argon / 10% CO ₂	450-510 (65-75) 480-550 (70-80)	510-590 (75-85) 550-620 (80-90)	24-28 24-28	96-137 (71-101) 57-108 (42-80)	81-111 (60-82) 41-94 (30-69)

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Required gas mixture 75-80% Argon/Balance CO₂ for AWS testing.

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.18/A5.36

	%C	%Mn	%Si	%S	%P	%Cu
Requirements – AWS A5.18: E70C-6M-H4 AWS A5.36: E70T15-M20A4-CS1-H4	0.12 max	1.75 max	0.90 max	0.03 max 0.030 max	0.03 max 0.030 max	0.50 max 0.035 max
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Argon / 10% CO ₂	0.03-0.05 0.03-0.05	1.25-1.60 1.25-1.70	0.50-0.80 0.60-0.85	0.02-0.03 0.02-0.03	0.01-0.02 0.01-0.02	0.01-0.05 0.01-0.05
	%Ni	%Cr	%Mo	%V	%Ni + %Cr + %Mo + %V	Diffusible Hydrogen (mL/100g weld deposit)
Requirements – AWS A5.18: E70C-6M-H4 AWS A5.36: E70T15-M20A4-CS1-H4	0.50 max	0.20 max	0.30 max	0.08 max	0.50 max	4.0 max 4 max
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ ⁽³⁾ As-Welded with 90% Argon / 10% CO ₂	0.01-0.03 0.01-0.03	0.01-0.04 0.01-0.05	0.01-0.02 0.01-0.02	0.01-0.02 0.01-0.02	0.05-0.10 0.05-0.10	2-4

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁵⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage ⁽⁶⁾ (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
0.045 in (1.1 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	21-23	155	2.3 (5.0)	2.1 ((4.6)	92
		6.4 (250)	22-24	185	2.8 (6.2)	2.6 (5.8)	94
		7.6 (300)	22-26	220	3.5 (7.7)	3.2 (7.0)	91
		8.9 (350)	22-27	245	4.0 (8.9)	3.7 (8.2)	93
		10.2 (400)	23-27	260	4.6 (10.1)	4.3 (9.4)	93
		11.4 (450)	23-28	280	5.2 (11.4)	4.9 (10.7)	94
		12.7 (500)	23-29	305	5.7 (12.6)	5.5 (12.2)	97
		14.0 (550)	24-29	315	6.3 (13.9)	6.2 (13.6)	98
		15.2 (600)	25-30	325	6.8 (15.1)	6.7 (14.8)	98
0.052 in (1.3 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	22-24	210	3.0 (6.7)	2.9 (6.3)	94
		6.4 (250)	22-26	260	3.9 (8.5)	3.5 (7.8)	92
		7.6 (300)	22-27	290	4.6 (10.2)	4.3 (9.5)	94
		8.9 (350)	23-27	315	5.4 (11.8)	5.2 (11.4)	97
		10.2 (400)	24-28	350	6.3 (13.8)	6.1 (13.4)	97
		11.4 (450)	25-28	370	6.9 (15.2)	6.8 (15.1)	99
		12.7 (500)	27-29	390	7.7 (16.9)	7.6 (16.8)	99
14.0 (550)	27-30	420	8.4 (18.5)	8.3 (18.3)	99		
1/16 in (1.6 mm), DC+ 90% Argon / 10% CO ₂	25-32 (1-1 1/4)	3.8 (150)	22-24	230	3.2 (7.0)	2.8 (6.2)	89
		5.1 (200)	22-25	280	4.3 (9.4)	3.9 (8.7)	93
		6.4 (250)	23-28	310	5.3 (11.6)	5.0 (11.0)	94
		7.6 (300)	24-29	370	6.3 (13.9)	6.3 (13.8)	99
		8.9 (350)	26-30	400	7.4 (16.3)	7.2 (15.9)	98
		10.2 (400)	26-31	450	8.3 (18.4)	8.3 (18.4)	99
11.4 (450)	27-31	480	9.5 (21.0)	9.3 (20.6)	98		

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Required gas mixture 75-80% Argon/Balance CO₂ for AWS testing. ⁽⁵⁾To estimate ESO, subtract 3/16 in (4.8 mm) from CTWD. ⁽⁶⁾For greater percentage of CO₂ shielding gas, increase voltage by 1-2 volts. NOTE: This product contains micro-alloying elements. Additional information available upon request.

METALSHIELD® MC-710XL®

Mild Steel ▪ AWS E70C-6M H8

KEY FEATURES

- High column strength for excellent feedability
- Tolerates moderate amounts of surface contaminants

TYPICAL APPLICATIONS

- Automotive
- Structural fabrication
- General fabrication
- Applications where long conduit lengths or critical feeding is necessary

CONFORMANCES

AWS A5.18, ASME SFA-5.18: E70C-6M-H8, E70C-G-H8
AWS A5.36, ASME SFA-5.36: E70T15-M20A2-CS1-H8, E70T15-M21A2-CS1-H8
CWB/CSA W48-06: E491C-6M-H8

WELDING POSITIONS

All

SHIELDING GAS

75-95% Argon / Balance CO₂
 Flow Rate: 40-60 CFH

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Steel Spool	60 lb (27.2 kg) Coil	600 lb (272 kg) Accu-Trak® Drum
0.045 (1.1)	ED030592	ED028526	ED028450
0.052 (1.3)		ED028527	
1/16 (1.6)		ED028528	

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.18/A5.36

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft•lbf) @ -29°C (-20°F)
Requirements – AWS A5.18: E70C-6M-H8 AWS A5.36: E70T15-M20A2-CS1-H8	400 (58) min	480 (70) min 490-660 (70-95)	22 min	27 (20) min
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ ⁽⁴⁾ As-Welded with with 90% Argon / 10% CO ₂	450-510 (65-75) 480-550 (70-80)	510-590 (75-85) 550-620 (80-90)	24-28 24-28	54-149 (40-110) 54-149 (40-110)

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Required gas mixture 75-80% Argon/Balance CO₂ for AWS testing.

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.18/A5.36

	%C	%Mn	%Si	%S
Requirements – AWS A5.18: E70C-6M-H8 AWS A5.36: E70T15-M20A2-CS1-H8	0.12 max	1.75 max	0.90 max	0.03 max 0.030 max
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Argon / 10% CO ₂	0.02-0.05 0.02-0.05	1.20-1.65 1.40-1.85	0.50-0.75 0.50-0.90	0.01-0.02 0.01-0.02
	%P	%Cu	%Ni	%Cr
Requirements – AWS A5.18: E70C-6M-H8 AWS A5.36: E70T15-M20A2-CS1-H8	0.03 max 0.030 max	0.50 max 0.035 max	0.50 max	0.20 max
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Argon / 10% CO ₂	0.01-0.02 0.01-0.02	0.01-0.05 0.01-0.05	0.02-0.04 0.02-0.05	0.01-0.04 0.01-0.04
	%Mo	%V	%Ni + %C + %Mo + %V	Diffusible Hydrogen (mL/100g weld deposit)
Requirements – AWS A5.18: E70C-6M-H8 AWS A5.36: E70T15-M20A2-CS1-H8	0.30 max	0.08 max	0.50 max	8.0 max 8 max
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ ⁽⁴⁾ As-Welded with 90% Argon / 10% CO ₂	0.01-0.02 0.01-0.02	0.01-0.02 0.01-0.02	0.05-0.10 0.05-0.10	6-8

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD⁽⁵⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage⁽⁶⁾ (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
0.045 in (1.1 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	24-25	165	2.3 (5.1)	2.2 (4.8)	94
		6.4 (250)	25-26	200	2.9 (6.4)	2.8 (6.1)	95
		8.9 (350)	28-29	230	4.1 (9.0)	3.9 (8.6)	95
		11.4 (450)	30-31	310	5.2 (11.5)	5.0 (11.1)	96
		14.0 (550)	32-33	355	6.4 (14.1)	6.2 (13.7)	97
		16.5 (650)	35-36	385	7.6 (16.7)	7.4 (16.2)	97
0.052 in (1.3 mm), DC+ 90% Argon / 10% CO ₂	25-32 (1-1 1/4)	4.4 (175)	23-25	195	2.7 (6.0)	2.5 (5.5)	92
		6.4 (250)	25-27	260	3.9 (8.6)	3.6 (8.0)	93
		8.9 (350)	28-30	330	5.4 (11.9)	5.1 (11.2)	94
		11.4 (450)	31-33	390	7.0 (15.4)	6.6 (14.5)	94
		14.0 (550)	34-36	430	8.5 (18.8)	8.1 (17.8)	95
1/16 in (1.6 mm), DC+ 90% Argon / 10% CO ₂	25-32 (1-1 1/4)	3.8 (150)	24-26	235	3.1 (6.9)	2.9 (6.5)	94
		6.4 (250)	28-30	330	5.2 (11.4)	4.9 (10.8)	95
		8.9 (350)	33-35	410	7.4 (16.3)	7.0 (15.5)	95
		11.4 (450)	35-37	460	9.4 (20.7)	9.0 (19.8)	96

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Required gas mixture 75-80% Argon/Balance CO₂ for AWS testing.

⁽⁵⁾To estimate ESO, subtract 3/16 in (4.8 mm) from CTWD. ⁽⁶⁾For greater percentage of CO₂ shielding gas, increase voltage by 1-2 volts.

METALSHIELD® Z

Mild Steel ▪ AWS E70C-GS

KEY FEATURES

- Designed to enhance productivity and quality of single pass lap and fillet welds on galvanized and other zinc coated steels (galvannealed)
- Capable of travel speeds exceeding 55 inches per minute with zero external porosity and less than 1% internal porosity
- Developed for optimal performance with Rapid Z® Waveform Control Technology®
- Reduces both external and internal weld metal porosity inherent to welding coated steel
- Ideal for welding thin gauge material
- Minimizes heat input into the weldment, reducing burn-through potential and minimizing HAZ size
- Able to successfully bridge gaps due to poor fit-up
- Use with DCEN polarity or customized waveforms for optimal productivity and quality

CONFORMANCES

AWS A5.18/A5.18M: E70C-GS
JIS Z 3313 T 49 T15-0 G S G

TYPICAL APPLICATIONS

- Automotive
- Coated Steels
- Robotics / Hard Automation
- Single Pass Welds

SHIELDING GAS

90% Argon / 10% CO₂
Flow rate: 40-50 CFH

WELDING POSITIONS

All

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Fiber Spool	500 lb (227 kg) Accu-Trak® Drum
0.035 (0.9)	ED036258	ED036259
0.040 (1.0)	ED035515	ED035516

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

	Yield Strength ⁽²⁾ MPa (ksi)	Longitudinal Bend Test
Requirements - AWS A5.18: E70C-GS	480 (70) min	180° over 3/4 in Radius
Typical Results⁽³⁾ As-Welded with 90% Argon / 10% CO ₂	570 (83)	No openings exceeding 1/8 in

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

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.18/A5.18M

	%C	%Mn	%Si	%S	%P
Requirements – AWS A5.18: E70C-G5	Not Specified				
Typical Results⁽³⁾ As-Welded with 90% Argon / 10% CO ₂	0.07-0.12	1.5-2.1	0.9-1.25	0.02 max	0.015 max

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)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
0.035 in (0.9 mm), DC- 90% Argon / 10% CO ₂	15-19 (5/8-3/4)	6.4 (250)	21	129	1.7 (3.8)	1.6 (3.6)	95
		10.2 (400)	23	163	2.8 (6.1)	2.8 (6.1)	99
		14.0 (550)	24	191	3.8 (8.3)	3.7 (8.1)	97
0.040 in (1.0 mm), DC- 90% Argon / 10% CO ₂	15-19 (5/8-3/4)	2.5 (100)	19	100	1.0 (2.1)	0.9 (2.0)	95
		10.8 (425)	23	220	3.9 (8.6)	3.8 (8.3)	97
		14.0 (550)	26	265	5.1 (11.2)	5.0 (11.0)	98

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer. ⁽⁴⁾To estimate ESO, subtract 3/16 in (4.8 mm) from CTWD.

METALSHIELD® MC®-80Ni1

Low Alloy ▪ AWS E80C-Ni1

KEY FEATURES

- H4 diffusible hydrogen levels
- Low spatter and excellent arc stability
- Deoxidizing agents minimize pre- and post-weld clean up
- Enhanced silicon island management
- Low temperature impact properties – Capable of exceeding 40 J (29 ft•lbf) @ -45°C (-50°F)
- Excellent bead shape and profile
- Meets the AWS E80C-Ni1 H4 requirement for tensile and yield strength in both the as-welded condition and after 2 hrs of post-weld heat treating (PWHT)

WELDING POSITIONS

All

CONFORMANCES

AWS A5.28, ASME SFA-5.28: E80C-Ni1-H4
AWS A5.36, ASME SFA-5.36: E80T15-M13A5-Ni1-H4,
 E80T15-M12A5-Ni1-H4,
 E80T15-M21A5-Ni1-H4
CWB/CSA W48-06: E55C-Ni1 H4 (E80C-Ni1 H4)

TYPICAL APPLICATIONS

- Robotics/hard automation
- Weathering grades of the appropriate strength ASTM A588 & A709 steels
- Structural fabrication
- Heavy fabrication

SHIELDING GAS

75-95% Argon / Balance CO₂
 95-99% Argon / Balance O₂
 Flow Rate: 40-60 CFH

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb. (15 kg) Plastic Spool (Vacuum Sealed Foil Bag)	500 lb. (227 kg) Accu-Trak® Drum
0.045 (1.1)	ED034213	ED034216
0.052 (1.3)	ED034214	ED034217
1/16 (1.6)	ED034215	ED034218

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.28/A5.36

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft•lbf) @ -45°C (-50°F)
Requirements – AWS A5.28: E80C-Ni1-H4 AWS A5.36: E80T15-M13A5-Ni1-H4	470 (68) min	550 (80) 550-690 (80-100)	24 min 19 min	27 (20) min
Test Results⁽³⁾				
As-Welded with 98% Argon / 2% O ₂	530-620 (77-90)	605-660 (88-96)	24-28	60-100 (43-76)
As-Welded with 92% Argon / 8% CO ₂ Stress Relieved 2 hrs. @ 621°C (1150°F)	510 - 570 (74 - 83) 540 (78)	585 - 635 (85 - 92) 620 (90)	27 - 29 29	85 - 120 (61 - 89) 85 (61)
As-Welded with 75% Argon / 25% CO ₂ Stress Relieved 2 hrs. @ 621°C (1150°F)	480 - 540 (70 - 78) 470 (68)	565 - 615 (82 - 89) 565 (82)	28 - 31 29	40 - 95 (29 - 70) 80 (58)

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

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.28/A5.36

	%C	%Mn	%Si	%S	%P	%Cu
Requirements - AWS A5.28: E80C-Ni1-H4 AWS A5.36: E80T15-M13A5-Ni1-H4	0.12 max	1.50 max 1.75 max	0.90 max 0.80 max	0.025 max 0.030 max	0.030 max	0.35 max Not Specified
Test Results⁽³⁾						
As-Welded with 98% Argon / 2% O ₂	0.07 - 0.08	1.31 - 1.35	0.48 - 0.50	0.024 max	0.012	0.03 - 0.05
As-Welded with 92% Argon / 8% CO ₂	0.05 - 0.07	1.22 - 1.30	0.43 - 0.47	0.024 max	0.012	0.03 - 0.05
As-Welded with 75% Argon / 25% CO ₂	0.05 - 0.06	1.14 - 1.19	0.38 - 0.42	0.024 max	0.012	0.04 - 0.06
	%Ni	%Cr	%Mo	%V	Diffusible Hydrogen (mL/100g weld deposit)	
Requirements - AWS A5.28: E80C-Ni1-H4 AWS A5.36: E80T15-M13A5-Ni1-H4	0.80 - 1.10 1.25 - 2.60	Not Specified 0.15 max	0.30 max	0.03 max	4.0 max 4 max	
Test Results⁽³⁾						
As-Welded with 98% Argon / 2% O ₂	0.84 - 0.86	0.05 max	0.10 max	0.01 max	3 - 4	
As-Welded with 92% Argon / 8% CO ₂	0.83 - 0.86	0.05 max	0.10 max	0.01 max	3 - 4	
As-Welded with 75% Argon / 25% CO ₂	0.80 - 0.85	0.05 max	0.10 max	0.01 max	3 - 4	

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁴⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage ⁽⁵⁾ (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lb/hr)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
0.045 in. (1.1 mm), DC+ 92% Argon / 8% CO ₂	19-25 (3/4-1)	5.1 (200)	21-23	180	2.5 (5.5)	2.2 (4.9)	89
		6.4 (250)	22-25	220	3.1 (6.8)	2.9 (6.3)	93
		7.6 (300)	22-26	250	3.7 (8.2)	3.4 (7.4)	90
		8.9 (350)	22-27	280	4.4 (9.6)	3.9 (8.9)	92
		10.2 (400)	23-27	310	4.9 (10.9)	4.5 (10.3)	94
		12.7 (500)	23-28	350	6.2 (13.6)	5.6 (13.0)	96
		15.2 (600)	25-29	380	7.4 (16.3)	6.9 (15.6)	96
0.052 in. (1.3 mm), DC+ 92% Argon / 8% CO ₂	25-32 (1-1 1/4)	3.8 (150)	22-25	200	2.4 (5.3)	2.2 (4.8)	91
		5.1 (200)	23-26	250	3.2 (7.0)	3.0 (6.6)	94
		6.4 (250)	24-28	290	4.0 (8.8)	3.8 (8.4)	95
		7.6 (300)	26-29	320	4.8 (10.5)	4.7 (10.4)	99
		10.2 (400)	27-30	360	6.4 (14.0)	6.4 (14.0)	99
1/16 in. (1.6 mm), DC+ 92% Argon / 8% CO ₂	25-32 (1-1 1/4)	3.8 (150)	22-25	235	3.4 (7.5)	3.0 (6.7)	89
		5.1 (200)	23-26	295	4.4 (9.7)	4.2 (9.2)	95
		6.4 (250)	24-28	350	5.8 (12.7)	5.4 (11.8)	93
		7.6 (300)	26-29	395	6.9 (15.2)	6.5 (14.3)	94
		10.2 (400)	27-30	465	9.2 (20.2)	8.8 (19.3)	96

⁽¹⁾ Typical all weld metal. ⁽²⁾ Measured with 0.2% offset. ⁽³⁾ See test results disclaimer. ⁽⁴⁾ To estimate ESO, subtract 1/4 in. (6.0 mm) from CTWD.

⁽⁵⁾ For shielding gas blends of 95-99% Argon / Balance O(2), decrease voltage by 1-2 volts.

METALSHIELD® MC®-90

Low Alloy ▪ AWS E90C-K3 H4

KEY FEATURES

- H4 diffusible hydrogen levels
- Low spatter and excellent arc stability
- Deoxidizing agents minimize pre- and post-weld clean up
- Enhanced silicon island management
- Low temperature impact properties – Charpy V-Notch test results capable of exceeding 40 J (30 ft•lbf) @ -51°C (-60°F)
- Excellent bead shape and profile

WELDING POSITIONS

All

SHIELDING GAS

75-90% Argon / Balance CO₂
Flow Rate: 40-60 CFH

CONFORMANCES

- AWS A5.28, ASME SFA-5.28:** E90C-K3-H4
AWS A5.36, ASME SFA-5.36: E90T15-M20A6-K3-H4, E90T15-M21A6-K3-H4
CWB/CSA W48-06: E62C-K3 H4 (E90C-K3 H4)
EN ISO 18276-B: T626T150MA-N3M2-H5

TYPICAL APPLICATIONS

- Robotics/hard automation
- HSLA steels (i.e. ASTM A678 & A710)
- Crane fabrication
- Structural fabrication
- Heavy fabrication
- Power generation

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb. (15 kg) Plastic Spool	500 lb. (227 kg) Accu-Trak® Drum
0.045 (1.1)	ED033904	ED033907
0.052 (1.3)	ED033905	ED033908
1/16 (1.6)	ED033906	ED033909

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.28/A5.36

	Yield Strength ⁽²⁾ 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: E90C-K3-H4 AWS A5.36: E90T15-M20A6-K3-H4	540 (78) min	620 (90) min 620-760 (90-110)	18 min 17 min	Not Specified	27 (20) min
Typical Results⁽³⁾					
As-Welded with 75% Argon / 25% CO ₂	585-685 (85-100)	655-755 (95-105)	19-27	60-93 (44-68)	36-87 (27-64)
As-Welded with 90% Argon / 10% CO ₂	585-725 (85-105)	655-825 (95-120)	18-25	41-100 (30-74)	27-91 (20-67)

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

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.28/A5.36

	%C	%Mn	%Si	%S	%P	%Cu
Requirements - AWS A5.28: E90C-K3-H4 AWS A5.36: E90T15-M20A6-K3-H4	0.15 max	0.75-2.25	0.80 max	0.025 max 0.030 max	0.025 max 0.030 max	0.35 max Not Specified
Typical Results⁽²⁾ As-Welded with 75% Argon / 25% CO ₂ As-Welded with 90% Argon / 10% CO ₂	0.04-0.08 0.04-0.08	1.00-1.51 1.10-1.65	0.20-0.35 0.20-0.35	0.01-0.02 0.01-0.02	0.01-0.02 0.01-0.02	0.02-0.06 0.03-0.07
	%Ni	%Cr	%Mo	%V	Diffusible Hydrogen (mL/100g weld deposit)	
Requirements - AWS A5.28: E90C-K3-H4 AWS A5.36: E90T15-M20A6-K3-H4	0.50-2.50 1.25 - 2.60	0.15 max	0.25-0.65	0.03 max 0.05 max	4.0 max 4 max	
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ As-Welded with 90% Argon / 10% CO ₂	1.50-1.90 1.60-1.90	0.01-0.10 0.01-0.10	0.30-0.45 0.30-0.45	0.01-0.02 0.01-0.02	2.5-4	

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas ⁽⁴⁾	CTWD ⁽⁵⁾ mm (in)	Wire Feed Speed	Voltage (volts)	Approx. Current (amps)	Melt-Off Rate	Deposition Rate	Efficiency (%)
		m/min (in/min)			kg/hr (lb/hr)	kg/hr (lb/hr)	
0.045 in (1.1 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	21-23	170	2.4 (5.3)	2.2 (4.7)	89
		6.4 (250)	23-25	195	3.0 (6.7)	2.7 (6.0)	90
		8.9 (350)	25-27	250	4.3 (9.4)	3.8 (8.4)	89
		11.4 (450)	27-29	285	5.4 (11.9)	5.2 (11.4)	96
		14.0 (550)	29-31	330	6.6 (14.5)	6.4 (14.1)	97
		16.6 (650)	31-33	360	7.8 (17.3)	7.7 (16.9)	98
0.052 in (1.3 mm), DC+ 90% Argon / 10% CO ₂	19 - 25 (3/4-1)	5.1 (200)	22-24	225	3.2 (7.1)	2.9 (6.5)	91
		6.4 (250)	24-26	260	4.0 (8.8)	3.6 (7.9)	90
		8.9 (350)	26-28	295	5.6 (12.4)	5.3 (11.8)	95
		11.4 (450)	28-30	345	7.2 (15.9)	7.1 (15.6)	98
		14.0 (550)	30-32	400	8.7 (19.2)	8.6 (18.9)	98
1/16 in (1.6 mm), DC+ 90% Argon / 10% CO ₂	25-32 (1-1 1/4)	5.1 (200)	23-25	260	4.4 (9.7)	4.0 (8.9)	91
		6.4 (250)	26-28	300	5.5 (12.1)	5.2 (11.4)	94
		8.9 (350)	28-30	360	7.7 (16.9)	7.5 (16.5)	98
		11.4 (450)	30-32	420	9.9 (21.8)	9.7 (21.3)	98

⁽¹⁾ Typical all weld metal. ⁽²⁾ Measured with 0.2% offset. ⁽³⁾ See test results disclaimer ⁽⁴⁾ For greater percentage of CO₂ shielding gas, increase voltage by 1-2 volts. ⁽⁵⁾ To estimate ESO, subtract 3/16 in. (4.8 mm) from CTWD. NOTE: Consult steel manufacturer's recommendations regarding minimum and maximum pre-heat temperature, interpass temperature, and heat input.

METALSHIELD® MC®-110

Low Alloy ▪ AWS E110C-K4 H4

KEY FEATURES

- H4 diffusible hydrogen levels
- Low spatter and excellent arc stability
- Deoxidizing agents minimize pre- and post-weld clean up
- Enhanced silicon island management
- Low temperature impact properties – Charpy V-Notch test results capable of exceeding 40 J (30 ft•lbf) @ -51°C (-60°F)
- Excellent bead shape and profile

WELDING POSITIONS

All

SHIELDING GAS

75-90% Argon / Balance CO₂
Flow Rate: 40-60 CFH

CONFORMANCES

- AWS A5.28, ASME SFA-5.28:** E110C-K4-H4
AWS A5.36, ASME SFA-5.36: E110T15-M20A6-K4-H4, E110T15-M21A6-K4-H4
CWB/CSA W48-06: E76C-K4 H4 (E110C-K4 H4)
EN ISO 18276-B T766T15-OMAN4C1M2-H5

TYPICAL APPLICATIONS

- Robotics/hard automation
- HSLA and quenched and tempered steels (i.e. HY-100 and ASTM 514)
- Crane fabrication
- Heavy Equipment
- Pressure vessels

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb. (15 kg) Plastic Spool	500 lb. (227 kg) Accu-Trak® Drum
0.045 (1.1)	ED033910	ED033913
0.052 (1.3)	ED033911	ED033914
1/16 (1.6)	ED033912	ED033915

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.28/A5.36

	Yield Strength ⁽²⁾ 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: E110C-K4-H4 AWS A5.36: E110T15-M20A6-K4-H4	680 (98) min	760 (110) min 760-900 (110-130)	15 min	Not Specified	27 (20) min
Typical Results⁽³⁾					
As-Welded with 75% Argon / 25% CO ₂	690-795 (100-115)	760-825 (110-120)	20-24	60-88 (44-65)	45-80 (34-59)
As-Welded with 90% Argon / 10% CO ₂	725-825 (105-120)	790-895 (115-130)	18-23	66-95 (48-70)	59-82 (44-61)

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

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.28/A5.36

	%C	%Mn	%Si	%S	%P	%Cu
Requirements – AWS A5.28: E110C-K4-H4 AWS A5.36: E110T15-M20A6-K4-H4	0.15 max	0.75-2.25 1.20 - 2.25	0.80 max	0.025 max 0.030 max	0.025 max 0.030 max	0.35 max Not Specified
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ As-Welded with 90% Argon / 10% CO ₂	0.05-0.08 0.05-0.08	1.45-1.75 1.45-1.75	0.45-0.65 0.45-0.65	0.01-0.02 0.01-0.02	0.01-0.02 0.01-0.02	0.02-0.06 0.02-0.06
	%Ni	%Cr	%Mo	%V	Diffusible Hydrogen (mL/100g weld deposit)	
Requirements – AWS A5.28: E110C-K4-H4 AWS A5.36: E110T15-M20A6-K4-H4	0.50-2.50 1.75 - 2.60	0.15-0.65 0.20 - 0.60	0.25-0.65 0.20 - 0.65	0.03 max	4.0 max 4 max	
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂ As-Welded with 90% Argon / 10% CO ₂	2.00-2.20 2.00-2.20	0.20-0.35 0.20-0.35	0.45-0.55 0.45-0.55	0.01-0.02 0.01-0.02	2.5-4	

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas ⁽⁴⁾	CTWD ⁽⁵⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
0.045 in (1.1 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	22-24	170	2.4 (5.3)	2.1 (4.7)	88
		6.4 (250)	24-26	190	3.0 (6.7)	2.8 (6.1)	91
		8.9 (350)	26-28	240	4.2 (9.2)	3.8 (8.4)	91
		11.4 (450)	28-30	290	5.4 (11.8)	5.1 (11.3)	95
		14.0 (550)	30-32	330	6.5 (14.4)	6.3 (13.9)	97
		16.6 (650)	31-33	370	7.8 (17.1)	7.6 (16.7)	97
0.052 in (1.3 mm), DC+ 90% Argon / 10% CO ₂	19-25 (3/4-1)	5.1 (200)	23-25	225	3.2 (7.0)	2.8 (6.2)	89
		6.4 (250)	25-27	255	4.0 (8.8)	3.7 (8.1)	92
		8.9 (350)	27-29	295	5.5 (12.2)	5.3 (11.6)	95
		11.4 (450)	29-31	350	7.2 (15.8)	7.0 (15.4)	98
		14.0 (550)	31-33	400	8.7 (19.1)	8.5 (18.8)	98
1/16 in (1.6 mm), DC+ 90% Argon / 10% CO ₂	25-32 (1-1 1/4)	5.1 (200)	24-26	270	4.4 (9.6)	3.9 (8.6)	89
		6.4 (250)	26-28	320	5.4 (12.1)	5.1 (11.3)	94
		8.9 (350)	28-30	385	7.7 (16.9)	7.4 (16.4)	97
		11.4 (450)	30-32	465	9.8 (21.6)	9.6 (21.2)	98

⁽¹⁾ Typical all weld metal. ⁽²⁾ Measured with 0.2% offset. ⁽³⁾ See test results disclaimer ⁽⁴⁾ For greater percentage of CO₂ shielding gas, increase voltage by 1-2 volts. ⁽⁵⁾ To estimate ESO, subtract 3/16 in. (4.8 mm) from CTWD.
NOTE: Consult steel manufacturer's recommendations regarding minimum and maximum pre-heat temperature, interpass temperature, and heat input.