

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®
- ▶ Deoxidizing arc action minimizes pre-weld work

Typical Applications

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

Conformances

AWS A5.18/A5.18M: 2005 E70C-6M H4
 ASME SFA-A5.18: E70C-6M H4
 CWB/CSA W48-06: E491C-6MJ-H4

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	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/A5.18M: 2005

	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 E70C-6M H4	400 (58) min.	480 (70) min.	22 min.	27 (20) min.	Not Specified
Typical Performance⁽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)

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(AWS E70C-6M H4)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.18/A5.18M: 2005

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

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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