METALSHIELD® MC®-120

Low Alloy ▪ AWS E120C-K4-H4, E120T15-M20A6-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 27 J (20 ft▪lbf) @ -51°C (-60°F)
- Excellent bead shape and profile

WELDING POSITIONS

All

SHIELDING GAS

75-90% Argon / Balance CO_2
Flow Rate: 40-60 CFH

CONFORMANCES

AWS A5.28:	E120C-K4-H4
ASME SFA-5.28:	E120C-K4-H4
AWS A5.36:	E120T15-M20A6-K4-H4
ASME SFA-5.36:	E120T15-M20A6-K4-H4
CWB/CSA W48-06:	E83C-K4-H4 (E120C-K4-H4)

TYPICAL APPLICATIONS

- Robotics/hard automation
- HSLA and quenched and tempered steels (i.e. HY-100 and ASTM A514)
- Crane fabrication
- Heavy Equipment
- Pressure vessels

Diameter in (mm)	33 lb (15 kg) Plastic Spool
0.052 (1.3)	ED036480

MECHANICAL PROPERTIES[1]

	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft▪lbf) @ -40°C (-40°F)	Charpy V-Notch J (ft▪lbf) @ -51°C (-60°F)
Requirements - AWS A5.28: E120C-K4-H4	750 (108) min	830 (120) min	15 min	Not Specified	27 (20) min
AWS A5.36: E120T15-M20A6-K4-H4	740 (108) min	830-970 (120-140)	14 min		
Typical Results[3]					
As-Welded with 75% Argon / 25% CO_2	790-800 (115-116)	855-860 (124-125)	22	60-70 (45-52)	40-45 (31-34)
As-Welded with 90% Argon / 10% CO_2	820-860 (119-125)	880-915 (128-133)	21	50-70 (39-55)	45-46 (32-34)

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

DEPOSIT COMPOSITION[1]

	%C	%Mn	%Si	%S	%P	%Cu
Requirements - AWS A5.28: E120C-K4-H4 AWS A5.36: E120T15-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	0.06 - 0.07 0.06 - 0.08	1.70 - 1.80 1.80 - 1.90	0.58 - 0.62 0.60 - 0.66	0.010 0.020	0.010	0.02 0.02 - 0.03

	%Ni	%Cr	%Mo	%V	Diffusible Hydrogen (mL/100g weld deposit)
Requirements - AWS A5.28: E120C-K4-H4 AWS A5.36: E120T15-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	1.90 - 2.10	0.31 - 0.33	0.55 - 0.58 0.56 - 0.63	0.01	1.0 - 3.0

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 (%)
0.052 in (1.3 mm), DC+ 90% Argon / 10% CO_2	19-25 (3/4-1)	5.1 (200) 6.4 (250) 8.9 (350) 11.4 (450) 14.0 (550)	23-25 25-27 27-29 29-31 31-33	200 230 320 370 420	3.1 (6.8) 3.9 (8.5) 5.8 (12.7) 7.3 (16.1) 9.0 (19.8)	2.9 (6.5) 3.7 (8.1) 5.4 (11.8) 7.2 (15.8) 8.7 (19.2)	96 95 93 98 97

[1] Typical all weld metal. [2] Measured with 0.2% offset. [3] See test results disclaimer [4] For greater percentage of CO_2 shielding gas, increase voltage by 1-2 volts. [5] To estimate ESO, subtract 3/16 in. (4.8 mm) from CTWD.

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

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