

ULTRACORE® 360™ M81

Low Alloy, All Position ■ AWS E81T1-M21A8-Ni1-H4

KEY FEATURES

- Seamless design protects the flux core from environmental exposure helping to maintain low diffusible hydrogen and extend shelf life
- Copper coating offers superior feedability and extended contact tip life
- Low spatter and fume levels for less post-weld clean up and a better work environment
- Low H4 diffusible hydrogen levels minimize the risk of hydrogen induced cracking
- Premium arc performance and bead appearance

WELDING POSITIONS

All

CONFORMANCES

AWS A5.36 E81T1-M21A8-Ni1-H4
EN ISO 17632-A: T46 6 1Ni PM 1 H5

TYPICAL APPLICATIONS

- Offshore
- Structural
- Oil & Gas

SHIELDING GAS

80% Ar, 20% CO₂
 Flow rate: 28-38 CFH

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Fiber Spool
0.045 (1.2)	W000403774
0.052 (1.3)	W000403775
1/16 (1.6)	W000403776

MECHANICAL PROPERTIES⁽¹⁾

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf)	
				@ -40 °C (-40 °F)	@ -62 °C (-80 °F)
Requirements AWS A5.36: E81T1-M21A8-Ni1-H4	470 (68) min	550 - 690 (80-100)	19 min	Not Specified	27 (20) min
Typical Results⁽³⁾ As-Welded with 80% Ar/ 20% CO ₂	490-550 (71-80)	570-620 (82-90)	26-28	95-125 (70-92)	70-95 (52-70)

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

DEPOSIT COMPOSITION⁽¹⁾

	%C	%Mn	%Si	%S	%P	%Ni
Requirements AWS A5.36: E81T1-M21A8-Ni1-H4	0.12 max	1.75 max	0.80 max	0.03 max	0.03 max	0.8 - 1.1
Typical Results⁽³⁾ As-Welded with 80% Ar / 20% CO ₂	0.05 - 0.07	1.15 - 1.35	0.3 - 0.4	< 0.015	< 0.015	0.8-1.0
	%Cr	%Mo	%V	%Cu	%B	Diffusible Hydrogen (mL/100g weld deposit)
Requirements AWS A5.36: E81T1-M21A8-Ni1-H4	0.15 max	0.35 max	0.05 max	Not Specified	Not Specified	4 max
Typical Results⁽³⁾ As-Welded with 80% Ar / 20% CO ₂	< 0.02	< 0.02	< 0.02	0.02 - 0.1	0.003- 0.005	2-4

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 (%)
0.045 in (1.2 mm), DC+ 80% Ar / 20% CO ₂	15-20 (3/4)	6.0 (236)	21-23	160	2.5 (5.5)	2.2 (4.8)	85-88
		7.5 (295)	23-24	190	3.1 (6.9)	2.7 (6.0)	
		9.0 (354)	24-26	220	3.8 (8.3)	3.3 (7.3)	
		10.5 (413)	26-28	250	4.4 (9.7)	3.9 (8.6)	
		11.5 (453)	27-29	260	4.8 (10.6)	4.3 (9.4)	
		13.0 (512)	28-30	270	5.4 (12.0)	4.8 (10.7)	
0.052 in (1.3 mm), DC+ 80% Ar / 20% CO ₂	15-20 (3/4)	5.0 (197)	21-22	210	2.7 (6.1)	2.4 (5.3)	85-88
		6.0 (236)	23-24	240	3.3 (7.3)	2.9 (6.3)	
		8.0 (315)	26-27	280	4.4 (9.7)	3.9 (8.5)	
		9.0 (354)	27-29	300	4.9 (10.9)	4.4 (9.7)	
		10.0 (394)	27-29	320	5.5 (12.1)	4.9 (10.8)	
1/16 in (1.6 mm), DC+ 80% Ar / 20% CO ₂	15-20 (3/4)	3.1 (122)	21-22	190	2.4 (5.3)	2.1 (4.6)	85-88
		5.0 (197)	23-26	280	3.9 (8.6)	3.4 (7.6)	
		6.5 (256)	26-28	350	5.1 (11.2)	4.5 (10.0)	
		7.5 (295)	27-29	370	5.9 (12.9)	5.2 (11.5)	
		9.0 (354)	28-30	400	7.0 (15.5)	6.3 (13.8)	

⁽¹⁾Typical all weld metal. ⁽³⁾See test results disclaimer. ⁽⁴⁾To estimate ESO, subtract 1/4 in (6.0 mm) from CTWD.
NOTE: This product contains micro-alloying elements. Additional information available upon request.

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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