

# ULTRACORE® HD-12M

Mild Steel, All Position ■ AWS E71T-12M-JH8, E71T1-M21A4-CS2-H8

## KEY FEATURES

- Increase weld deposition up to 14 lbs/hr out-of-position
- Results in a flat bead shape and enhanced productivity in all positions
- Operators can set the machine on a single setting and weld in all positions
- Capable of exceeding 27 J (20 ft•lbf) at -40°C (-40°F)
- ProTech® foil bag packaging

## WELDING POSITIONS

All

## SHIELDING GAS

75-80% Argon / Balance CO<sub>2</sub>  
Flow Rate: 40 - 50 CFH

## CONFORMANCES

<b>AWS A5.20/5.20M:</b>	E71T-12M-JH8, E71T-1M-JH8, E71T-9M-JH8
<b>AWS A5.36:</b>	E71T1-M21A4-CS2-H8
<b>ASME SFA-5.20:</b>	E71T-12M-JH8, E71T-1M-JH8, E71T-9M-JH8
<b>ABS:</b>	3YSA H10, 3Y400SA H10
<b>EN ISO 17632-B:</b>	T494T12-1MAK-H10
<b>CWB / CSA W48-06:</b>	E491T-9MJ-H8 E491T-9MJ-H8

## TYPICAL APPLICATIONS

- Heavy Fabrication
- Mining
- General Fabrication

## DIAMETERS / PACKAGING

Diameter in (mm)	15 lb (6.8 kg) Plastic Spool 60 lb (27.2 kg) Master Carton	33 lb (15 kg) Fiber Spool
0.045 (1.1)	ED036180	ED034277
0.052 (1.3)	ED036181	ED034278
1/16 (1.6)	ED036294	ED034279

## MECHANICAL PROPERTIES<sup>(1)</sup>

	Yield Strength <sup>(2)</sup> MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft•lbf)	
				@ -29°C (-20°F)	@ -40°C (-40°F)
<b>Requirements<sup>(4)</sup></b> AWS A5.20: E71T-12M-JH8 AWS A5.36: E71T1-M21A4-CS2-H8	400 (58) min	480-620 (70-90) 480-660 (70-95)	22 min	-	27 (20) min
<b>Typical Results<sup>(3)</sup></b> As-Welded with 75% Argon / 25% CO <sub>2</sub> Stress Relieved for 1 hr @ 620°C (1150°F)	538 (78) 503 (73)	600 (87) 593 (86)	26 29	102 (75) 68 (50)	65 (48) -

## DEPOSIT COMPOSITION<sup>(1)</sup>

	%C	%Mn	%Si	%Ni
<b>Requirements<sup>(4)</sup></b> AWS A5.20: E71T-12M-JH8 AWS A5.36: E71T1-M21A4-CS2-H8	0.12 max	1.60 max	0.90 max	0.50 max
<b>Typical Results<sup>(3)</sup></b> As-Welded with 75% Argon / 25% CO <sub>2</sub>	0.05	1.40	0.39	0.40
	%S	%P	Diffusible Hydrogen (mL/100g weld deposit)	
<b>Requirements<sup>(4)</sup></b> AWS A5.20: E71T-12M-JH8 AWS A5.36: E71T1-M21A4-CS2-H8	0.03 max 0.030 max	0.03 max 0.030 max	8.0 max 8 max	
<b>Typical Results<sup>(3)</sup></b> As-Welded with 75% Argon / 25% CO <sub>2</sub>	0.01	0.01	4-7	

<sup>(1)</sup>Typical all weld metal. <sup>(2)</sup>Measured with 0.2% offset. <sup>(3)</sup>See test results disclaimer <sup>(4)</sup>As-Welded with 75-80% Ar / Balance CO<sub>2</sub>

**TYPICAL OPERATING PROCEDURES**

Diameter, Polarity Shielding Gas	CTWD <sup>(5)</sup> 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+ As-Welded with 75% Ar/25% CO <sub>2</sub>	25 (1)	4.4 (175)	23-28	115	1.8 (3.9)	1.5 (3.4)	85-88
		6.4 (250)	24-29	140	2.5 (5.6)	2.2 (4.8)	
		7.6 (300)	25-30	155	3.1 (6.8)	2.6 (5.8)	
		8.9 (350)	25-30	170	3.6 (7.9)	3.1 (6.8)	
		10.2 (400)	25-30	185	4.1 (9.0)	3.5 (7.8)	
		11.4 (450)	26-31	200	4.6 (10.1)	4.0 (8.8)	
		12.7 (500)	26-31	215	5.1 (11.3)	4.4 (9.8)	
		14.0 (550)	27-32	230	5.6 (12.4)	4.9 (10.8)	
0.052 in (1.3 mm), DC+ As-Welded with 75% Ar/25% CO <sub>2</sub>	25 (1)	3.8 (150)	23-28	140	2.1 (4.7)	1.7 (3.8)	85-88
		5.1 (200)	24-29	160	2.9 (6.3)	2.4 (5.2)	
		6.4 (250)	25-30	180	3.5 (7.8)	3.0 (6.5)	
		7.6 (300)	25-30	205	4.3 (9.4)	3.6 (7.9)	
		8.9 (350)	26-31	225	5.0 (11.0)	4.2 (9.2)	
		9.5 (375)	26-31	235	5.3 (11.7)	4.5 (9.9)	
		10.8 (425)	26-31	255	6.0 (13.3)	5.1 (11.1)	
		12.1 (475)	27-32	275	6.8 (14.9)	5.7 (12.6)	
1/16 in (1.6 mm), DC+ As-Welded with 75% Ar/25% CO <sub>2</sub>	25 (1)	3.8 (150)	22-27	200	2.9 (6.4)	2.4 (5.3)	85-88
		4.4 (175)	23-28	215	3.4 (7.5)	2.9 (6.3)	
		5.1 (200)	23-28	230	3.9 (8.5)	3.3 (7.2)	
		5.7 (225)	23-28	245	4.4 (9.6)	3.7 (8.1)	
		6.4 (250)	24-29	255	4.8 (10.6)	4.1 (9.1)	
		7.6 (300)	24-29	285	5.8 (12.7)	4.9 (10.9)	
		8.3 (325)	25-30	300	6.3 (13.8)	5.4 (11.9)	
		8.9 (350)	25-30	310	6.7 (14.8)	5.8 (12.8)	
10.2 (400)	26-31	340	7.7 (16.9)	6.7 (14.7)			

<sup>(1)</sup>Typical all weld metal. <sup>(2)</sup>Measured with 0.2% offset. <sup>(3)</sup>See test results disclaimer <sup>(4)</sup>As-Welded with 75-80% Ar / Balance CO<sub>2</sub>. <sup>(5)</sup>To estimate ESO, subtract 1/4 in (6.0 mm) from CTWD.

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