

# ULTRACORE® 81Ni1A75-H

Low Alloy, All Position ▪ AWS E81T1-Ni1M-JH4



## KEY FEATURES

- Capable of producing weld deposits with impact toughness exceeding 88 - 123 J (65 - 91 ft•lbf) at -40°C (-40°F)
- Designed for welding with 75-85% Argon/ balance CO<sub>2</sub> shielding gas
- Premium arc performance and bead appearance
- Meets AWS D1.8 seismic lot waiver requirements
- ProTech® foil bag packaging
- Color match on weathering steel

## WELDING POSITIONS

All

## SHIELDING GAS

75% - 85% Argon / Balance CO<sub>2</sub>  
Flow Rate: 40-50 CFH

## CONFORMANCES

<b>AWS A5.29/A5.29M:</b>	E81T1-Ni1M-JH4
<b>ASME SFA-A5.29:</b>	E81T1-Ni1M-JH4
<b>ABS:</b>	4YQ460SA H5
<b>Lloyd's Register:</b>	4Y46S H5
<b>DNV Grade:</b>	IV 46MS H5
<b>CWB/CSA W48-06:</b>	E551T1-Ni1M-JH4 (E81T1-Ni1M-JH4)
<b>EN ISO 17632-B:</b>	T554T1-1MA-N2-H5
<b>FEMA 353</b>	
<b>AWS D1.8</b>	

## TYPICAL APPLICATIONS

- Bridge fabrication
- Weathering steels
- Offshore
- Structural fabrication
- NACE applications

## DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Spool**	500 lb (227 kg) Accu-Trak® Drum
0.045 (1.1)	ED032206, ED034411*	
0.052 (1.3)	ED032279	ED034412*
1/16 (1.6)	ED032207, ED034413*	

\*Buy America Product \*\*Spool may be plastic or fiber.

## 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 E81T1-Ni1M-JH4	470 (68) min	550-690 (80-100)	19 min	27 (20) min.	27 (20) min.
<b>Typical Results<sup>(3)</sup></b> As-Welded with 75% Ar/25% CO <sub>2</sub>	545-595 (79-86)	595-640 (86-93)	24-28	107-142 (79-105)	88-123 (65-91)

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

	%C	%Mn	%Si	%S	%P
<b>Requirements<sup>(4)</sup></b> - AWS E81T1-Ni1M-JH4	0.12 max	1.50 max	0.80 max	0.030 max	0.030 max
<b>Typical Results<sup>(3)</sup></b> As-Welded with 75% Ar/25% CO <sub>2</sub>	0.04-0.05	1.26-1.36	0.25-0.29	0.006-0.009	0.005-0.008
	%Ni	%Mo	%Cr	%V	Diffusible Hydrogen (mL/100g weld deposit)
<b>Requirements<sup>(4)</sup></b> - AWS E81T1-Ni1M-JH4	0.80-1.10	0.35 max	0.15 max	0.05 max	4.0 max
<b>Typical Results<sup>(3)</sup></b> As-Welded with 75% Ar/25% CO <sub>2</sub>	0.86-0.96	0.01	0.04-0.05	0.02-0.03	2-4

<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% Argon / 25% 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+ 75%-85% Ar/ balance CO <sub>2</sub>	25 (1)	4.4 (175)	22-27	140	1.8 (4.0)	1.6 (3.5)	86-88
		5.1 (200)	23-28	150	2.1 (4.6)	1.8 (4.0)	
		6.4 (250)	24-29	165	2.6 (5.7)	2.3 (5.0)	
		7.6 (300)	24-29	190	3.1 (6.8)	2.7 (6.0)	
		8.9 (350)	25-30	205	3.6 (8.0)	3.2 (7.0)	
		9.5 (375)	25-30	225	3.9 (8.6)	3.4 (7.5)	
		10.8 (425)	26-31	245	4.4 (9.7)	3.8 (8.5)	
		12.1 (475)	27-32	265	4.9 (10.8)	4.3 (9.5)	
0.052 in (1.3 mm), DC+ 75%-85% Ar/ balance CO <sub>2</sub>	25 (1)	3.8 (150)	22-27	150	2.0 (4.5)	1.8 (3.9)	86-88
		4.7 (185)	23-28	165	2.5 (5.5)	2.2 (4.8)	
		5.7 (225)	23-28	190	3.1 (6.7)	2.7 (5.9)	
		6.4 (250)	24-29	215	3.4 (7.5)	2.9 (6.5)	
		7.0 (275)	24-29	235	3.7 (8.2)	3.2 (7.2)	
		7.6 (300)	25-30	265	4.1 (9.0)	3.5 (7.8)	
		8.5 (335)	25-31	275	4.5 (10.0)	4.0 (8.7)	
		9.5 (375)	26-32	295	5.1 (11.2)	4.4 (9.8)	
1/16 in (1.6 mm), DC+ 75%-85% Ar/ balance CO <sub>2</sub>	25 (1)	3.8 (150)	22-27	200	2.9 (6.3)	2.5 (5.5)	86-88
		4.4 (175)	23-28	210	3.3 (7.4)	2.9 (6.4)	
		5.1 (200)	24-29	235	3.8 (8.4)	3.3 (7.3)	
		5.7 (225)	24-29	265	4.3 (9.5)	3.7 (8.2)	
		6.5 (250)	25-30	285	4.8 (10.5)	4.2 (9.2)	
		7.0 (275)	25-31	315	5.3 (11.6)	4.6 (10.1)	
		8.3 (325)	26-32	335	6.2 (13.7)	5.4 (11.9)	
		8.9 (350)	27-33	365	6.7 (14.7)	5.8 (12.8)	

<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% Argon / 25% CO<sub>2</sub>. <sup>(5)</sup>To estimate ESO, subtract 1/4 in (6.0 mm) from CTWD.  
 NOTE 1 : FEMA and AWS D1.8 structural steel seismic supplement test data can be found on this product at [www.lincolnelectric.com](http://www.lincolnelectric.com). NOTE 2: 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](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.

**CUSTOMER ASSISTANCE POLICY**

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