

ULTRACORE® 81Ni1C-H

Low Alloy, All Position ▪ AWS E81T1-Ni1C-JH4



KEY FEATURES

- Capable of producing weld deposits with impact toughness exceeding 84 - 130 J (62 - 96 ft•lbf) at -40°C (-40°F)
- Designed for welding with 100% CO₂ shielding gas
- Premium arc performance and bead appearance
- Meets AWS D1.8 seismic lot waiver requirements
- ProTech® foil bag packaging
- Color match on weathering steels

WELDING POSITIONS

All

SHIELDING GAS

100% CO₂
Flow Rate: 40-50 CFH

CONFORMANCES

AWS A5.29/A5.29M:	E81T1-Ni1C-JH4
ASME SFA-A5.29:	E81T1-Ni1C-JH4
ABS:	4YQ460SA H5
Lloyd's Register:	4Y46S H5
DNV Grade:	IV Y46MS H5
CWB/CSA W48-06:	E551T1-Ni1C-JH4 (E81T1-Ni1C-JH4)
EN ISO 17632-B:	T554T1-1CA-N2-H5
FEMA 353	
AWS D1.8	

TYPICAL APPLICATIONS

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

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Spool**	50 lb (22.7 kg) Fiber Spool
0.045 (1.1)	ED032204, ED034414*	ED032745, ED034416*
0.052 (1.3)	ED032280, ED034415*	
1/16 (1.6)	ED032205	

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

MECHANICAL PROPERTIES⁽¹⁾

	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⁽⁴⁾ - AWS E81T1-Ni1C-JH4	470 (68) min	550-690 (80-100)	19 min	27 (20) min	27 (20) min
Typical Results⁽³⁾ As-Welded with 100% CO ₂	540-585 (78-84)	595-635 (86-91)	25-28	111-152 (82-112)	84-130 (62-96)

DEPOSIT COMPOSITION⁽¹⁾

	%C	%Mn	%Si	%S	%P
Requirements⁽⁴⁾ - AWS E81T1-Ni1C-JH4	0.12 max	1.50 max	0.80 max	0.030 max	0.030 max
Typical Results⁽³⁾ As-Welded with 100% CO ₂	0.04-0.05	1.24-1.34	0.27-0.31	0.006-0.007	0.007-0.009
	%Ni	%Mo	%Cr	%V	Diffusible Hydrogen (mL/100g weld deposit)
Requirements⁽⁴⁾ - AWS E81T1-Ni1C-JH4	0.80-1.10	0.35 max	0.15 max	0.05 max	4.0max
Typical Results⁽³⁾ As-Welded with 100% CO ₂	0.88-0.99	0.01	0.04-0.05	0.02-0.03	3-4

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾As-Welded with 100% CO₂

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	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 (%)
0.045 in (1.1 mm), DC+ 100% CO ₂	25 (1)	4.4 (175)	23-28	140	1.8 (4.0)	1.6 (3.5)	86-88
		5.1 (200)	24-29	150	2.1 (4.6)	1.8 (4.0)	
		6.4 (250)	25-30	165	2.6 (5.7)	2.3 (5.0)	
		7.6 (300)	25-30	190	3.1 (6.8)	2.7 (6.0)	
		8.9 (350)	26-31	205	3.6 (8.0)	3.2 (7.0)	
		9.5 (375)	26-31	225	3.9 (8.6)	3.4 (7.5)	
		10.8 (425)	27-32	245	4.4 (9.7)	3.8 (8.5)	
		12.1 (475)	28-33	265	4.9 (10.8)	4.3 (9.5)	
0.052 in (1.3 mm), DC+ 100% CO ₂	25 (1)	3.8 (150)	23-28	150	2.0 (4.5)	1.8 (3.9)	86-88
		4.7 (185)	24-29	165	2.5 (5.5)	2.2 (4.8)	
		5.7 (225)	24-29	190	3.1 (6.7)	2.7 (5.9)	
		6.4 (250)	25-30	215	3.4 (7.5)	2.9 (6.5)	
		7.0 (275)	25-30	235	3.7 (8.2)	3.2 (7.2)	
		7.6 (300)	26-31	255	4.1 (9.0)	3.5 (7.8)	
		8.5 (335)	26-31	275	4.5 (10.0)	4.0 (8.7)	
		9.5 (375)	27-32	295	5.1 (11.2)	4.4 (9.8)	
1/16 in (1.6 mm), DC+ 100% CO ₂	25 (1)	3.8 (150)	24-29	200	2.9 (6.3)	2.5 (5.5)	86-88
		4.4 (175)	24-30	210	3.3 (7.4)	2.9 (6.4)	
		5.1 (200)	25-30	235	3.8 (8.4)	3.3 (7.3)	
		5.7 (225)	25-31	265	4.3 (9.5)	3.7 (8.2)	
		6.4 (250)	26-31	285	4.8 (10.5)	4.2 (9.2)	
		7.0 (275)	26-32	305	5.3 (11.6)	4.6 (10.1)	
		8.3 (325)	27-32	335	6.2 (13.7)	5.4 (11.9)	
		8.9 (350)	28-34	365	6.7 (14.7)	5.8 (12.8)	

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾As-Welded with 100% CO₂ ⁽⁵⁾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. 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

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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