UltraCore® 81Ni2C-H

Low Alloy, All Position • AWS E81T1-Ni2C-JH4

Key Features

- Capable of producing weld deposits with impact toughness exceeding 54 - 84 J (40 - 62 ft•lbf) at -51°C (-60°F)
- Designed for welding with 100% CO_2 shielding gas
- Premium arc performance and bead appearance
- H4 diffusible hydrogen levels
- ProTech® foil bag packaging

Typical Applications

- Mining
- Offshore
- Bridge fabrication
- High strength fabrication

Conformances

AWS A5.29/A5.29M: 2005	E81T1-Ni2C-JH4
ASME SFA-A5.29:	E81T1-Ni2C-JH4
ABS:	3YSA H5
Lloyd's Register:	3YS H5
DNV Grade:	III Y40MS H5
CWB/CSA W48-06:	E551T1-Ni2C-JH4 (E81T1-Ni2C-JH4)
EN ISO 17632-B:	T556T1-1CA-N5-H5

Welding Positions

All, except vertical down

Shielding Gas

100% CO_2
Flow Rate: 40-50 CFH

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Spool*
0.045 (1.1)	ED032215
0.052 (1.3)	ED032278
1/16 (1.6)	ED032214

*Spool may be plastic or fiber.

MECHANICAL PROPERTIES[1] – *As Required per AWS A5.29/A5.29M: 2005*

	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[4] - AWS E81T1-Ni2C-JH4	470 (68) min.	550-670 (80-100)	19 min.	27 (20) min.	27 (20) min.
Typical Results[3] As-Welded with 100% CO_2	555-600 (80-86)	615-650 (89-94)	26-28	76-111 (56-82)	54-84 (40-62)

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DEPOSIT COMPOSITION[1] – *As Required per AWS A5.29/A5.29M: 2005*

	%C	%Mn	%Si	%S
Requirements[4] - AWS E81T1-Ni2C-JH4	0.12 max.	1.50 max.	0.80 max.	0.030 max.
Typical Results[3] As-Welded with 100% CO_2	0.04-0.05	1.14-1.24	0.27-0.32	0.006-0.007

	%P	%Ni	Diffusible Hydrogen (mL/100g weld deposit)
Requirements[4] - AWS E81T1-Ni2C-JH4	0.030 max.	1.75-2.75	4.0 max.
Typical Results[3] As-Welded with 100% CO_2	0.006-0.007	1.86-2.19	2-4

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)	**All Position**					
		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)	
		Flat & Horizontal					
		12.1 (475)	28-33	265	4.9 (10.8)	4.3 (9.5)	
		12.7 (500)	29-34	275	5.2 (11.4)	4.5 (10.0)	
0.052 in (1.3 mm), DC+ 100% CO_2	25 (1)	**All Position**					
		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)	
		Flat & Horizontal					
		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)	
		10.2 (400)	27-34	310	5.4 (12.0)	4.7 (10.4)	
1/16 in (1.6 mm), DC+ 100% CO_2	25 (1)	**All Position**					
		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	305	4.8 (10.5)	4.2 (9.2)	
		Flat & Horizontal					
		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 on pg. 12. [4]As-Welded with 100% CO_2. [5]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

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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