

UltraCore® 81K2A75-H

Low Alloy, All Position • AWS E81T1-K2M-JH4

Key Features

- ▶ Capable of producing weld deposits with impact toughness exceeding 89 - 127 J (66 - 94 ft•lbf) at -40°C (-40°F)
- ▶ Designed for welding with 75-85% Argon/ balance CO₂ shielding gas
- ▶ Premium arc performance and bead appearance
- ▶ H4 diffusible hydrogen levels
- ▶ ProTech® foil bag packaging

Conformances

AWS A5.29/A5.29: 2005	E81T1-K2M-JH4
ASME SFA-A5.29:	E81T1-K2M-JH4
ABS:	4YQ460SA H5
Lloyd's Register:	4Y46S H5
DNV Grade:	IV 46MS H5
EN ISO 17632-B:	T554T1-1MA-N3-H5

Welding Positions

All, except vertical down

Typical Applications

- ▶ High strength steels with 550 MPa (80 ksi) tensile strength
- ▶ Offshore
- ▶ Shipbuilding

Shielding Gas

75% - 85% Argon / Balance CO₂
Flow Rate: 35 - 45 CFH

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Spool*
0.045 (1.1)	ED032385
0.052 (1.3)	ED032386
1/16 (1.6)	ED032387

*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)	
				@ -29°C (-20°F)	@ -40°C (-40°F)
Requirements⁽⁴⁾ - AWS E81T1-K2M-JH4	470 (68) min.	550-690 (80-100)	19 min.	27 (20) min.	27 (20) min.
Typical Results⁽³⁾ As-Welded with 75% Argon/25% CO ₂	535-550 (78-80)	585-605 (85-88)	26-27	117-155 (86-114)	89-127 (66-94)

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(AWS E81T1-K2M-JH4)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.29/A5.29M: 2005

	%C	%Mn	%Si	%S	%P
Requirements⁽⁴⁾ - AWS E81T1-K2M-JH4	0.15 max.	0.50-1.75	0.80 max.	0.030 max.	0.030 max.
Typical Results⁽³⁾ As-Welded with 75% Ar/25% CO ₂	0.04-0.05	0.98-1.09	0.25-0.28	0.006-0.009	0.005-0.008
	%Ni	%Cr	%Mo	%V	Diffusible Hydrogen (mL/100g weld deposit)
Requirements⁽⁴⁾ - AWS E81T1-K2M-JH4	1.00-2.00	0.15 max.	0.35 max.	0.05 max.	4 max.
Typical Results⁽³⁾ As-Welded with 75% Ar/25% CO ₂	1.40-1.63	0.03-0.04	0.01-0.02	0.02-0.03	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+ 75%-85% Ar/ balance CO ₂	25 (1)	All Position						86-88
		4.4 (175)	22-27	140	1.8 (4.0)	1.6 (3.5)		
		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)		
		Flat & Horizontal						
		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)		
12.7 (500)	28-33	275	5.2 (11.4)	4.5 (10.0)				
0.052 in (1.3 mm), DC+ 75%-85% Ar/ balance CO ₂	25 (1)	All Position						86-88
		3.8 (150)	22-27	150	2.0 (4.5)	1.8 (3.9)		
		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)		
		6.9 (275)	24-29	235	3.7 (8.2)	3.2 (7.2)		
		7.6 (300)	25-30	255	4.1 (9.0)	3.5 (7.8)		
		Flat & Horizontal						
		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)		
10.2 (400)	26-33	310	5.4 (12.0)	4.7 (10.4)				
1/16 in (1.6 mm), DC+ 75%-85% Ar/ balance CO ₂	25 (1)	All Position						86-88
		3.8 (150)	22-27	200	2.9 (6.3)	2.5 (5.5)		
		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)		
		6.4 (250)	25-30	285	4.8 (10.5)	4.2 (9.2)		
		6.9 (275)	25-31	315	5.3 (11.6)	4.6 (10.1)		
		Flat & Horizontal						
		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)		

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer below. ⁽⁴⁾As-Welded with 75% Argon/25% CO₂. ⁽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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