ULTRACORE® 81K2M-H PLUS

Low Alloy, All Positions ▪ AWS E81T1-K2M-JH4

KEY FEATURES

- Innovative design capable of superior toughness at -60°F in both the as-welded and stress-relieved conditions
- Designed for welding with 75-80% Argon/ Balance CO_2 shielding gas
- H4 diffusible hydrogen levels
- Q2 Lot® - Certificate showing actual deposit chemistry and mechanical properties per lot available online
- ProTech® foil bag packaging

WELDING POSITIONS

All

CONFORMANCES

AWS A5.29/A5.29M: E81T1-K2M-JH4
AWS A5.36/A5.36M: E81T1-M21A6-K2-H4, E81T1-M21P4-K2-H4
ASME SFA-5.29/SFA-5.29M: E81T1-K2M-JH4

TYPICAL APPLICATIONS

- Offshore drilling rigs
- Low temperature storage tanks
- Ship building
- Construction

SHIELDING GAS

75-80% Argon / Balance CO_2
Flow Rate: 40-50 CFH

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15kg) Plastic Spool
0.045 (1.1)	ED034861
0.052 (1.3)	ED034862
1/16 (1.6)	ED034863

MECHANICAL PROPERTIES[1]

	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 AWS A5.29: E81T1-K2M-JH4 As-Welded with 75% Ar / 25% CO_2	470 (68) min	550-690 (80-100)	19 min	27 (20) min	-
AWS A5.36: E81T1-M21A6-K2-H4 As-Welded with 75% Ar / 25% CO_2	470 (68) min	550-690 (80-100)	19 min	-	27 (20) min
AWS A5.36: E81T1-M21P4-K2-H4 Stress Relieved with 75% Ar / 25% CO_2 for 1 hr @ 621°C (1150°F)	470 (68) min	550-690 (80-100)	19 min	27 (20) min	-
Typical Results[3] As-Welded with 75% Ar / 25% CO_2	503-550 (73-80)	588-628 (85-91)	21-24	107-117 (79-86)	97-111 (72-82)
Stress Relieved with 75% Ar / 25% CO_2 for 1 hr @ 621°C (1150°F)	480-490 (69-71)	570-590 (83-85)	27-29	81-94 (60-70)	-

[1] Typical all weld metal. [2] Measure with 0.2% offset. [3] See test results disclaimer

DEPOSIT COMPOSITION[1]

	%C	%Mn	%Si	%S	%P
Requirements AWS A5.29: E81T1-K2M-JH4 AWS A5.36: E81T1-M21A6-K2-H4, E81T1-M21P4-K2-H4	0.15 max	0.50-1.75	0.80 max	0.030 max	0.030 max
Typical Results[3] with 75% Argon / 25% CO_2	0.05	1.28-1.30	0.42-0.44	0.007-0.009	0.011
	%Ni	**%Cr**	**%Mo**	**%V**	**Diffusible Hydrogen (mL/100g weld deposit)**
Requirements AWS A5.29: E81T1-K2M-JH4	1.00-2.00	0.15 max	0.35 max	0.05 max	4.0 max
Requirements AWS A5.36: E81T1-M21A6-K2-H4, E81T1-M21P4-K2-H4	1.00-2.00	0.15 max	0.35 max	0.05 max	4 max
Typical Results[3] with 75% Argon / 25% CO_2	1.45-1.60	0.05	0.01	0.00	2-4

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD[4] 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% Argon / 25% CO_2							
Optimal Settings	25 (1)	10.7 (420)	26	200	1.8-5.1 (4.0-11.3)	1.5-4.4 (3.4-9.8)	85-88
Min - Max	19-25 (3/4-1)	4.4-12.7 (175-500)	24-32	115-214			
0.052 in (1.3 mm), DC+ 75% Argon / 25% CO_2							
Optimal Settings	25 (1)	7.6 (300)	25	210	2.1-5.0 (4.7-11.0)	1.7-4.2 (3.8-9.2)	85-88
Min - Max	19-25 (3/4-1)	3.8-8.9 (150-350)	24-31	148-231			
1/16 in (1.6 mm), DC+ 75% Argon / 25% CO_2							
Optimal Settings	25 (1)	7.6 (300)	25	280	2.9-6.8 (6.4-15.0)	2.4-5.6 (5.3-12.4)	85-88
Min - Max	19-25 (3/4-1)	3.8-8.9 (150-350)	25-31	189-299			

[1] Typical all weld metal. [3] See test results disclaimer [4] 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.

CUSTOMER ASSISTANCE POLICY

The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

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