

ULTRACORE® 121K3M-H PLUS

Low Alloy, All Positions • AWS E121T1-GM-H4

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 CO₂ shielding gas
- H4 diffusible hydrogen levels
- Q2 Lot® - Certificate showing actual deposit chemistry and mechanical properties per lot available online
- ProTech® foil bag packaging

CONFORMANCES

AWS A5: E121T1-GM-H4

TYPICAL APPLICATIONS

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

WELDING POSITIONS

All

SHIELDING GAS

75-80% Argon / Balance CO₂
Flow Rate: 40-50 CFH

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Fiber Spool (VFB)
0.045 (1.1)	ED035423
0.052 (1.3)	ED035424

MECHANICAL PROPERTIES⁽¹⁾

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft-lbf)	
				-40°C [-40°F]	-51°C [-60°F]
Requirements AWS A5.29 E121T1-GM-H4 As-Welded with 75% Ar / 25% CO ₂	745 (108) min	825-965 (120-140)	14 min	-	-
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂	815-840 (118-122)	850-875 (123-127)	17-18	65-67 (48-50)	59-61 (44-45)
Stress Relieved with 75% Ar / 25% CO ₂ for 1 hr @ 620°C (1150°F)	745-765 (108-111)	805-820 (116-119)	18-23	32-37 (23-27)	-

DEPOSIT COMPOSITION⁽¹⁾

	%C	%Mn	%Si	%S	%P	%Ni
Requirements AWS A5.29 E121T1-GM-H4	Not Specified	0.50 ⁽⁴⁾	1.00 max	0.030 max	0.030 max	0.50 ⁽⁴⁾
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂	0.06-0.07	1.61-1.80	0.26-0.35	0.007-0.012	0.010-0.011	2.21-2.46
	%Cr	%Mo	%V	%B	Diffusible Hydrogen (mL/100g weld deposit)	
Requirements AWS A5.29 E121T1-GM-H4	0.30 ⁽⁴⁾	0.20 ⁽⁴⁾	0.10 ⁽⁴⁾	Not Specified	4.0 max	
Typical Results⁽³⁾ As-Welded with 75% Argon / 25% CO ₂	0.04-0.07	0.58- 0.65	0.00	0.004-0.005	1-3	

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

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ^(a) 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+	19 (3/4)	4.4 (175)	24 - 28	120	1.8 (3.9)	1.5 (3.4)	85-87
	19 (3/4)	6.4 (250)	25 - 29	140	2.5 (5.6)	2.2 (4.8)	
	19 (3/4)	7.6 (300)	26 - 30	155	3.1 (6.8)	2.6 (5.8)	
	19 (3/4)	8.9 (350)	27 - 31	170	3.6 (7.9)	3.1 (6.8)	
	25 (1)	10.2 (400)	28 - 32	185	4.1 (9.0)	3.5 (7.8)	
	25 (1)	11.4 (450)	28 - 32	200	4.6 (10.1)	4.0 (8.8)	
	25 (1)	12.7 (500)	29 - 33	220	5.1 (11.3)	4.4 (9.8)	
0.052 in (1.3 mm), DC+	19 (3/4)	3.8 (150)	26 - 29	160	2.1 (4.6)	1.7 (3.8)	82-84
	19 (3/4)	4.4 (175)	26 - 29	180	2.4 (5.4)	2.0 (4.5)	
	19 (3/4)	5.1 (200)	27 - 30	200	2.8 (6.2)	2.3 (5.1)	
	19 (3/4)	5.7 (225)	27 - 30	220	3.2 (7.0)	2.6 (5.8)	
	19 (3/4)	7.0 (275)	28 - 31	255	3.9 (8.5)	3.2 (7.1)	
	25 (1)	7.6 (300)	28 - 31	230	4.2 (9.3)	3.5 (7.8)	
	25 (1)	8.3 (325)	28 - 31	245	4.6 (10.1)	3.8 (8.4)	
	25 (1)	8.9 (350)	29 - 32	255	4.9 (10.9)	4.1 (9.1)	

^(a) Typical all weld metal. ^(b) Measure with 0.2% offset. ^(c) See test results disclaimer

^(d) In order to meet the requirements of the G group, the undiluted weld metal shall have not less than the minimum specified for one or more of the elements listed.

^(e) To estimate ESO, subtract 1/4 in (6.0 mm) from CTWD.

Safety Data Sheets (SDS) and Certificates of Conformance are available on our website at www.lincolnelectric.com

FUMES AND GASES can be hazardous to your health.

- Fumes from the normal use of this product contain significant quantities of potentially hazardous compounds. See consumable product label/insert.
- Keep your head out of the fumes.
- Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area.
- An approved respirator should be used unless exposure assessments are below applicable exposure limits.

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 business of Lincoln Electric is manufacturing and selling high quality welding equipment, automated welding systems, consumables, and cutting equipment. Our challenge is to meet the needs of our customers, who are experts in their fields, and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or technical information about their use of our products. Our employees respond to inquiries to the best of their ability based on information and specifications 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, or to provide engineering advice in relation to a specific situation. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or communications. Moreover, the provision of such information or technical information does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or technical information, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose or any other equivalent or similar warranty is specifically disclaimed.

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