ULTRACORE® 81Ni1C-H PLUS

Low Alloy, All Positions · AWS E81T1-Ni1C-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 100% 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
- Designed to accommodate applications requiring Nickel content of 1% max
- Color match on weathering steels

CONFORMANCES

AWS A5.29:	E81T1-Ni1C-JH4
ABS:	4YQ460SA H5
CWB/CSA W48:	E551T1-C1A5-Ni1-H4 (E551T1-Ni1C-JH4)
DNV - 2.9:	IV Y46MS H5
Lloyd's Register:	4Y46S H5
AWS D1.8:	0.045", 0.052", 1/16"

WELDING POSITIONS

All

TYPICAL APPLICATIONS

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

SHIELDING GAS

100% CO_2
Flow Rate: 40-50 CFH

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15kg) Plastic Spool
0.045 (1.1)	ED034858
0.052 (1.3)	ED034859
1/16 (1.6)	ED034860

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-Ni1C-JH4 As-Welded with 100% CO_2	470 (68) min	550-690 (80-100)	19 min	27 (20) min	-
Typical Results[3] As-Welded with 100% CO_2	505-565 (73-82)	585-640 (85-93)	23-29	87-127 (54-94)	41-123 (30-91)
Stress Relieved with 100% CO_2 for 1 hr @ 621°C (1150°F)	475-530 (69-77)	560-620 (81-90)	26-30	41-108 (30-80)	-

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

DEPOSIT COMPOSITION[1]

	%C	%Mn	%Si	%S	%P	%Ni
Requirements AWS A5.29: E81T1-Ni1C-JH4	0.12 max	1.50 max	0.80 max	0.030 max	0.030 max	0.80-1.10
Typical Results[3] with 100% CO_2	0.04-0.05	1.29-1.37	0.42-0.45	0.007-0.008	0.011	0.89-0.95
	%Cr	**%Mo**	**%V**	**%B**	**Diffusible Hydrogen (mL/100g weld deposit)**	
Requirements AWS A5.29: E81T1-Ni1C-JH4	0.15 max	0.35 max	0.05 max	Not Specified	4.0 max	
Typical Results[3] with 100% CO_2	0.05	0.10	0.00	0.004-0.005	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+	19 (3/4)	4.4 (175)	25 - 29	120	1.8 (3.9)	1.5 (3.4)	85-87
	19 (3/4)	6.4 (250)	26 - 30	140	2.5 (5.6)	2.2 (4.8)	
	19 (3/4)	7.6 (300)	27 - 31	155	3.1 (6.8)	2.6 (5.8)	
	19 (3/4)	8.9 (350)	28 - 32	170	3.6 (7.9)	3.1 (6.8)	
	25 (1)	10.2 (400)	29 - 33	185	4.1 (9.0)	3.5 (7.8)	
	25 (1)	11.4 (450)	29 - 33	200	4.6 (10.1)	4.0 (8.8)	
	25 (1)	12.7 (500)	30 - 34	220	5.1 (11.3)	4.4 (9.8)	
0.052 in (1.3 mm), DC+	19 (3/4)	3.8 (150)	25 - 29	150	2.1 (4.7)	1.7 (3.8)	81-84
	19 (3/4)	5.1 (200)	26 - 30	170	2.9 (6.3)	2.4 (5.2)	
	19 (3/4)	6.4 (250)	27 - 31	195	3.5 (7.8)	3.0 (6.5)	
	25 (1)	7.6 (300)	28 - 32	215	4.3 (9.4)	3.6 (7.9)	
	25 (1)	8.9(350)	29 - 33	240	5.0 (11.0)	4.2 (9.2)	
1/16 in (1.6 mm), DC+	19 (3/4)	3.8 (150)	26 - 30	190	2.9 (6.4)	2.4 (5.3)	83-87
	19 (3/4)	4.4 (175)	26 - 30	205	3.4 (7.5)	2.9 (6.3)	
	19 (3/4)	5.1 (200)	27 - 31	220	3.9 (8.5)	3.3 (7.2)	
	19 (3/4)	5.7 (225)	27 - 31	230	4.4 (9.6)	3.7 (8.1)	
	19 (3/4)	6.4 (250)	28 - 32	245	4.8 (10.6)	4.1 (9.1)	
	25 (1)	7.6 (300)	28 - 32	275	5.8 (12.7)	4.9 (10.9)	
	25 (1)	8.3 (325)	29 - 33	290	6.3 (13.8)	5.4 (11.9)	
	25 (1)	8.9 (350)	29 - 33	300	6.7 (14.8)	5.8 (12.8)	

[1] Typical all weld metal. [2] Measure with 0.2% offset. [3] See test results disclaimer [4] To estimate ESO, subtract 1/4 in (6.0 mm) from CTWD.

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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