

ULTRACORE® 712A80

Mild Steel, All Position · AWS E71T-12M-JH8, E71T-1M-JH8, E71T-9M-JH8



KEY FEATURES

- Capable of producing weld deposits with impact toughness exceeding 27 J (20 ft-lbf) at -40°C (-40°F)
- Designed for welding with 75-80% Argon/balance CO₂ shielding gas
- Premium arc performance and bead appearance
- ProTech® foil bag packaging

WELDING POSITIONS

All

SHIELDING GAS

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

CONFORMANCES

AWS A5.20:	E71T-12M-JH8, E71T-1M-JH8, E71T-9M-JH8
ABS:	4YSA H10
CWB/CSA W48:	E491T1-M21A4-CS1-H8 (E491T-9MJ-H8), E491T1-M21A4-CS2-H8 (E491T-12MJ-H8)
DNV - 2.9:	IV YMS H10
Lloyd's Register:	4YS H10
ISO 17632-B:	T49 4 T12-1 M21 A-K H10

TYPICAL APPLICATIONS

- Offshore
- Pressure vessels
- Shipbuilding
- Heavy equipment
- ASME related applications

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Spool**	50 lb (22.7 kg) Fiber Spool	500 lb (227 kg) Accu-Trak® Drum
0.045 (1.1)	ED031675, ED038181*	ED031850	ED032050
0.052 (1.3)	ED031676, ED038182*	ED031851	ED032051
1/16 (1.6)	ED031677, ED036415*	ED031852*	ED032052

*Buy America Product **Spool may be plastic or fiber.

MECHANICAL PROPERTIES⁽¹⁾

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf)		
				@ -18°C [0°F]	@ -29°C [-20°F]	@ -40°C [-40°F]
Requirements⁽⁴⁾ AWS A5.20 E71T-1M-JH8 AWS A5.20 E71T-9M-JH8 AWS A5.20 E71T-12M-JH8	400 [58] min	480-655 (70-95) 480-620 (70-90)	22 min	27 [20] min Not Specified Not Specified	Not Specified 27 [20] min 27 [20] min	27 [20] min
Typical Results⁽⁵⁾ As-Welded with 75%-80% Ar/balance CO ₂	505-555 [73-80]	565-610 [82-88]	25-27	166-186 [123-137]	100-160 [74-118]	72-142 [53-105]

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾As-Welded 75%-80% Argon/Balance CO₂.

DEPOSIT COMPOSITION⁽¹⁾

	%C	%Mn	%Si	%S	%P	%Ni	Diffusible Hydrogen (mL/100g weld deposit)
Requirements⁽⁴⁾ AWS A5.20 E71T-1M-JH8, E71T-9M-JH8 AWS A5.20 E71T-12M-JH8	0.12 max	1.75 max 1.60 max	0.90 max	0.03 max	0.03 max	0.50 max	8.0 max
Typical Results⁽⁵⁾ As-Welded with 75%-80% Ar/balance CO ₂	0.03-0.04	1.40-1.53	0.31-0.36	0.01	0.01	0.32-0.38	4 - 8

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ^(b) 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%-80% Ar/ balance CO ₂	25 (1)	4.4 (175)	20-25	140	1.8 (4.0)	1.6 (3.5)	86-88
		5.7 (225)	21-26	150	2.3 (5.1)	2.0 (4.5)	
		7.0 (275)	22-27	165	2.8 (6.3)	2.5 (5.5)	
		8.3 (325)	22-27	190	3.4 (7.4)	2.9 (6.5)	
		8.9 (350)	23-28	205	3.6 (8.0)	3.2 (7.0)	
		10.2 (400)	24-29	230	4.1 (9.1)	3.6 (8.0)	
		11.4 (450)	25-31	245	4.7 (10.3)	4.1 (9.0)	
		13.3 (525)	26-32	265	4.9 (10.8)	4.3 (9.5)	
			27-33	280	5.4 (12.0)	4.7 (10.4)	
0.052 in (1.3 mm), DC+ 75%-80% Ar/ balance CO ₂	25 (1)	3.8 (150)	20-25	150	2.0 (4.5)	1.8 (3.9)	86-88
		4.4 (175)	21-26	165	2.4 (5.2)	2.1 (4.6)	
		5.1 (200)	22-27	190	2.7 (6.0)	2.4 (5.2)	
		5.7 (225)	23-28	215	3.1 (6.7)	2.7 (5.9)	
		6.4 (250)	24-29	235	3.4 (7.5)	2.9 (6.5)	
		7.6 (300)	25-30	255	4.1 (9.0)	3.5 (7.8)	
		8.3 (325)	27-31	275	4.4 (9.7)	3.8 (8.5)	
		8.9 (350)	28-32	295	4.7 (10.5)	4.1 (9.1)	
			29-34	330	6.1 (13.5)	5.3 (11.7)	
1/16 in (1.6 mm), DC+ 75%-80% Ar/ balance CO ₂	25 (1)	3.8 (150)	21-26	200	2.9 (6.3)	2.5 (5.5)	86-88
		4.4 (175)	22-27	215	3.3 (7.4)	2.9 (6.4)	
		5.1 (200)	22-28	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)	
		7.6 (300)	26-31	315	5.7 (12.6)	5.0 (11.0)	
		8.3 (325)	27-32	335	6.2 (13.7)	5.4 (11.9)	
		8.9 (350)	28-33	365	6.7 (14.7)	5.8 (12.8)	
			29-34	415	7.6 (16.8)	6.6 (14.6)	

^(a)Typical all weld metal. ^(b)Measured with 0.2% offset. ^(c)See test results disclaimer. ^(d)As-Welded 75%-80% Argon/Balance CO₂. ^(e)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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