

# OUTERSHIELD® 71 ELITE

Mild Steel, All Position ■ AWS E71T-9C-H8, E71T-9M-H8, E71T1-C1A2-CS1-H8, E71T1-M21A2-CS1-H8

## KEY FEATURES

- Smooth arc transfer and low spatter
- Designed for welding with either 100% CO<sub>2</sub> or 75-82% Argon/balance CO<sub>2</sub> shielding gases
- Good bead appearance
- Fast freezing slag for out-of-position welding
- Meets AWS D1.8 seismic lot waiver requirements

## WELDING POSITIONS

All

## SHIELDING GAS

100% CO<sub>2</sub>  
 75 - 82% Argon / Balance CO<sub>2</sub>  
 Flow Rate: 40 - 50 CFH

## CONFORMANCES

<b>AWS A5.20:</b>	E71T-1C-H8, E71T-9C-H8, E71T-1M-H8, E71T-9M-H8
<b>AWS A5.36:</b>	E71T1-C1A2-CS1-H8, E71T1-M21A2-CS1-H8
<b>ASME SFA-A5.20:</b>	E71T-1C-H8, E71T-9C-H8, E71T-1M-H8, E71T-9M-H8
<b>ABS:</b>	3SA, 3YSA H10
<b>DNV Grade:</b>	III YMS H10
<b>GL:</b>	3YH10S
<b>LR:</b>	3YS H10
<b>CWB/CSA W48-06:</b>	E491T-9-H8, E491T-9M-H8

## TYPICAL APPLICATIONS

- Shipbuilding, barges and offshore platforms
- Heavy equipment
- Structural fabrication
- General fabrication

## DIAMETERS / PACKAGING

Diameter in (mm)	15 lb (6.8 kg) Plastic Spool 60 lb (27.2 kg) Master Carton	33 lb (15 kg) Steel Spool	60 lb (27.2 kg) Coil	600 lb (272 kg) Accu-Trak® Drum
0.045 (1.1)	ED029418	ED029201	ED029202	ED029387
0.052 (1.3)	ED029419	ED029204	ED029205	
1/16 (1.6)		ED029206	ED029207	

## MECHANICAL PROPERTIES<sup>(1)</sup>

	Yield Strength <sup>(2)</sup> MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft•lbf)	
				@ -18°C (0°F)	@ -29°C (-20°F)
<b>Requirements</b> AWS E71T-1C-H8, E71T-9C-H8 AWS E71T-1M-H8, E71T-9M-H8	400 (58) min	485-655 (70-95)	22 min	27 (20) min -	- 27 (20) min
<b>Typical Results<sup>(3)</sup></b> As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	545-565 (79-82) 585-595 (85-87)	585-615 (85-90) 625-630 (91-92)	28 25-28	74-83 (55-61) 92-99 (68-73)	58-64 (43-47) 70-83 (52-61)

<sup>(1)</sup>Typical all weld metal. <sup>(2)</sup>Measured with 0.2% offset. <sup>(3)</sup>See test results disclaimer

**DEPOSIT COMPOSITION<sup>(1)</sup>**

	%C	%Mn	%Si	%S	%P
<b>Requirements</b> AWS E71T-1C-H8, E71T-9C-H8 AWS E71T-1M-H8, E71T-9M-H8	0.12 max	1.75 max	0.90 max	0.03 max	0.03 max
<b>Typical Results<sup>(3)</sup></b> As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	0.01-0.04 0.02-0.04	1.41-1.50 1.55-1.65	0.44-0.60 0.56-0.75	≤0.01 ≤0.01	≤0.01 ≤0.01

**TYPICAL OPERATING PROCEDURES**

Diameter, Polarity Shielding Gas <sup>(4)</sup>	CTWD <sup>(5)</sup> 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% Ar / 25% CO <sub>2</sub>	19 (3/4)	4.5 (175)	21-24	130	1.7 (3.8)	1.5 (3.3)	87
		6.4 (250)	23-26	155	2.4 (5.4)	2.1 (4.7)	87
		7.6 (300)	24-27	180	2.9 (6.4)	2.5 (5.6)	87
		8.9 (350)	25-28	205	3.4 (7.6)	3.0 (6.6)	87
		10.2 (400)	26-29	230	4.0 (8.7)	3.5 (7.6)	87
		12.8 (500)	27-30	260	5.0 (10.9)	4.3 (9.5)	87
15.3 (600)	28-31	290	6.0 (13.1)	5.2 (11.4)	87		
0.052 in (1.3 mm), DC+ 75% Ar / 25% CO <sub>2</sub>	19 (3/4)	3.8 (150)	21-24	150	2.1 (4.6)	1.8 (3.9)	86
		5.1 (200)	22-25	180	2.8 (6.1)	2.4 (5.2)	86
		6.4 (250)	23-26	210	3.4 (7.6)	3.0 (6.5)	86
		7.6 (300)	24-27	240	4.8 (10.6)	4.1 (7.8)	86
		10.2 (400)	26-28	315	6.2 (13.7)	5.4 (10.5)	86
12.8 (500)	28-31	335	6.9 (15.2)	6.0 (13.1)	86		
1/16 (1.6 mm), DC+ 75% Ar / 25% CO <sub>2</sub>	19 (3/4)	3.2 (125)	21-24	190	2.4 (5.2)	2.0 (4.4)	85
		3.8 (150)	22-25	205	2.8 (6.2)	2.4 (5.3)	85
		5.1 (200)	22-26	240	3.8 (8.3)	3.2 (7.0)	85
		6.4 (250)	23-27	290	4.7 (10.3)	4.0 (8.8)	85
		7.6 (300)	24-28	325	5.6 (12.4)	4.8 (10.5)	85
		10.2 (400)	27-31	400	7.5 (16.5)	6.4 (14.0)	85

<sup>(1)</sup>Typical all weld metal. <sup>(2)</sup>Measured with 0.2% offset. <sup>(3)</sup>See test results disclaimer <sup>(4)</sup>When welding under CO<sub>2</sub> increase voltage by 1 Volt. <sup>(5)</sup>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](http://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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