



**GAS-SHIELDED METAL-CORED WIRE**  
**AWS E70C-6M H4; CWB E492C-6M H4; EN 758 T46 3 MM 3 H5**

100107 (Replaces 091118)

**MATRIX** is a revolutionary new metal-cored wire designed to provide maximum performance in automated and robotic applications. **MATRIX** utilizes the most advanced manufacturing technology in the industry to achieve unparalleled consistency. Not only is **MATRIX** ultra consistent, it also provides industry leading arc starting, as well as unrivaled feedability. **MATRIX** will handle your most difficult feeding applications. Through proprietary chemistry and manufacturing technology, **MATRIX** provides superior bead wetting, minimal silicon deposits, and an extremely smooth and stable arc. **MATRIX**, all the benefits of metal-core, and more.

**PRODUCT CHARACTERISTICS:**

- Advanced Feedability - **MATRIX** will feed where other wires just won't.
- Superior Arc Starting - **MATRIX** provides the most consistent arc starting in the industry.
- Attractive Bead Appearance - **MATRIX** has minimal silicon deposits, and excellent bead wetting.
- Superb Consistency - **MATRIX** delivers pound after pound, month after month.
- Exceptional Arc Characteristics - **MATRIX** presents a smooth and stable arc.
- High Productivity - **MATRIX** offers higher deposition rates than solid wire - particularly in automated or robotic applications.

**SPECIFICATIONS:**

E70C-6M H4 per AWS A5.18, ASME SFA 5.18  
 CWB 75% Ar/25% CO<sub>2</sub>; 95% Ar/5% CO<sub>2</sub>; E492C-6M H4  
 EN 758 T46 3 MM 3 H5

**SHIELDING GAS:**

75-95% Ar/Bal CO<sub>2</sub>, 35-50 cfh (16.5-23.6 l/min)

**WELDING POSITIONS:**

CV Spray - flat and horizontal, vertical down  
 Pulse and short arc - all position

**STANDARD DIAMETERS:**

.045", .052", 1/16", (1.2 mm, 1.4 mm, 1.6 mm)

**WELD TEST PARAMETERS:**

**MATRIX** .045" (1.2mm) diameter electrode was welded using 75% Ar/25% CO<sub>2</sub> and 90% Ar/10% CO<sub>2</sub> shielding gas with flow rate of 50 cfh (23.6 l/min), 290 amps, 425 in/min (10.79 m/min), DCEP, and 28-29 volts, both with 3/4" (19mm) electrical stick-out and 300°F ± 25°F (149°C ± 4°C) interpass temperature. A total of six layers were welded, two passes each for layers 1 through 4, three passes for layers five and six. The direction of travel was reversed for each layer.

**TYPICAL UNDILUTED WELD METAL CHEMISTRY:**

		C	Mn	Si	P	S
AWS Maximum	75% Ar/25% CO <sub>2</sub>	0.12	1.75	0.90	0.03	0.03
<b>MATRIX</b>	75% Ar/25% CO <sub>2</sub>	0.04	1.30	0.62	0.008	0.022
<b>MATRIX</b>	90% Ar/10% CO <sub>2</sub>	0.04	1.38	0.63	0.010	0.023

**TYPICAL DIFFUSIBLE HYDROGEN:**

1.26 ml/100gr (75% Ar/25% CO<sub>2</sub>)  
 1.35 ml/100gr (90% Ar/10% CO<sub>2</sub>)

**TYPICAL MECHANICAL PROPERTIES:**

	75% Ar/25% CO <sub>2</sub>	90% Ar/10% CO <sub>2</sub>	AWS Minimum Requirements
Tensile Strength	81,000 psi (558 MPa)	85,000 psi (586 MPa)	70,000 psi (480 MPa)
Yield Strength	68,000 psi (469 MPa)	73,000 psi (503 MPa)	58,000 psi (400 MPa)
Elongation	25%	23%	22%
CVN @ -20°F (-29°C)	37 ft•lbs (41J)	40 ft•lbs (54J)	20 ft•lbs. (27J)

\*The information contained or otherwise referenced herein is presented only as "typical" without guarantee or warranty, and Hobart Brothers Company expressly disclaims any liability incurred from any reliance thereon. Typical data is obtained when welded and tested in accordance with AWS A5.18 specification. Other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by Hobart Brothers Company.



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**RECOMMENDED OPERATING PARAMETERS:**

The information below was determined by welding MATRIX with 90% Ar/10% CO<sub>2</sub> shielding gas at a flow rate of 40 cfh (19 l/min), 30 ipm (.762 m/min) travel speed, in the 2F position.

Diameter, Electrical Stickout (ESO) Position	Arc Voltage (volts)	Current DCEP (+) (amps)	Approx. Wire Feed Speed		Deposition Rate	
			(in/min)	(m/min)	(lbs/hr)	(kg/hr)
.045" (1.2 mm) 5/8" ± 1/8" (16 mm ± 3 mm) Flat and Horizontal	25	200	269	6.83	6.8	3.08
	27	250	382	9.70	10.3	4.67
	<b>28</b>	<b>300</b>	<b>490</b>	<b>12.45</b>	<b>12.86</b>	<b>5.83</b>
	30	350	625	15.87	16.24	7.37
	32	375	700	17.78	18.33	8.31
.052" (1.4 mm) 3/4" ± 1/8" (19 mm ± 3 mm) Flat and Horizontal	26	250	255	6.48	8.99	4.08
	28	275	280	7.11	9.92	4.50
	<b>30</b>	<b>300</b>	<b>330</b>	<b>8.38</b>	<b>11.52</b>	<b>5.23</b>
	<b>32</b>	<b>350</b>	<b>425</b>	<b>10.79</b>	<b>14.86</b>	<b>6.74</b>
	34	400	515	13.08	18.74	8.50
1/16" (1.6 mm) 3/4" ± 1/4" (19 mm ± 3 mm) Flat and Horizontal	28	275	190	4.83	7.61	3.45
	30	300	232	5.89	10.01	4.54
	<b>31</b>	<b>350</b>	<b>282</b>	<b>7.16</b>	<b>12.81</b>	<b>5.81</b>
	33	400	341	8.66	16.04	7.28
	34	450	400	10.16	18.29	8.30

**Bold:** Optimum parameters for welder appeal.

**Notice:**

Actual use of the product may produce varying results due to conditions and welding techniques over which Tri-Mark has no control, including, but not limited to, plate chemistry, weldment design, fabrication methods, electrode size, welding procedure, service requirements and environment. The purchaser is solely responsible for determining the suitability of Tri-Mark products for the purchaser's own use. Any prior representations shall not be binding. Tri-Mark disclaims any warranty of merchantability or fitness for any particular purpose with respect to its products.

**Caution:**

Consumers should be thoroughly familiar with the safety precautions shown on the Warning Label posted on each shipment in and in American National Standard Z49.1, "Safety in Welding and Cutting," published by the American Welding Society, 550 NW LeJeune Road, Miami, FL 33126, and OSHA Safety and Health Standards 29 CFR 1910, available from the U.S. Department of Labor, Washington, D.C. 20210.