



TM-911B3

GAS-SHIELDED FLUX-CORED WIRE
AWS E91T1-B3C H4, E91T1-B3M H4

060921 (replaces 060829)

TM-911B3 provides 2-1/4% chromium/1% molybdenum steel weld metal in combination with excellent welder appeal. Bead geometry is good in all positions. TM-911B3 is recommended for the welding of 2-1/4% chromium/1% molybdenum steels, specifically ASTM A387, Grade 21 and 22, which are normally used in applications requiring creep resistance at elevated temperatures. TM-911B3 also provides some corrosion resistance. The wire is recommended for single-and multiple-pass welding in all positions using 100% CO₂ or 80% Ar/20% CO₂ shielding gas.

PRODUCT CHARACTERISTICS:

- Provides weld metal with a 2-1/4 Cr-1 Mo composition
- Intended for applications requiring creep resistance at elevated temperatures, such as pressure piping
- Argon/CO₂ gas shielding may be used but tensile strength may exceed 110,000 psi
- Typical diffusible hydrogen levels below 4 ml/100 g

SPECIFICATIONS:

E91T1-B3C H4, E91T1-B3M H4 per AWS A5.29, ASME SFA 5.29

SHIELDING GAS:

100% CO₂, 80% Ar/20% CO₂, 35-50 cfh

WELDING POSITIONS:

All positions

STANDARD DIAMETERS:

.045", .052

WELD TEST PARAMETERS:

TM-911B3 1/16" diameter electrode was welded using 100% CO₂ shielding gas with flow rate of 40 cfh, 275 amps (285 ipm), DCEP and 27 volts. And with 80% Ar/20% CO₂ shielding gas with a flow rate of 40 cfh, 275 amps (285 ipm), DCEP and 26 volts, both with 3/4" electrical stickout and 350± 25°F interpass temperature. A total of six layers were welded, two passes each for Layers 1 through 6. The direction of travel was reversed for each layer.

TYPICAL UNDILUTED WELD METAL CHEMISTRY*:

	C	Mn	Si	P	S	Mo	Cr
100% CO₂	0.05	0.64	0.27	0.011	0.013	0.93	2.04
80% Ar/20% CO₂	0.05	0.92	0.38	0.010	0.011	0.97	2.30

TYPICAL DIFFUSIBLE HYDROGEN: CO₂ 3 ml/100 gr - 80% Ar/20% CO₂ 3 ml/100 gr

TYPICAL MECHANICAL PROPERTIES*:

Stress Relieved 1 hr. @ 1275°F

	100% CO₂	80% Ar/20% CO₂
Tensile Strength	100,000 psi (693 MPa)	109,000 psi [†] (753 MPa)
Yield Strength	86,000 psi (592 MPa)	86,000 psi (592 MPa)
Elongation	20%	18.5%
CVN	not required	not required

*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 A5.29 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 performed with 100% CO₂ shielding gas at a flow rate of 35 cfh. The use of 80% Ar/20% CO₂ shielding gas will typically require one less volt.

Diameter, Electrical Stickout (ES) Position	Arc Voltage (volts)	Current DCEP (+) (amps)	Approx. Wire Feed Speed (in/min)	Deposition Rate (lb/hr)
.045" 1/2" to 3/4" Flat and Horizontal	20	115	120	2.7
	28 30	275 325	440 660	to 14.5
Vertical and Overhead	21	115	120	2.7
	26	200	285	to
	28	250	425	8.8
.052" 1/2" to 3/4" Flat and Horizontal	21	125	110	3.8
	29 32	300 375	410 550	to 15.8
Vertical and Overhead	21	125	100	3.8
	25	225	240	to
	26	250	310	8.1
1/16" 1/2" to 1" Flat and Horizontal	21	150	100	4.0
	29 31	350 425	345 480	to 20.2
Vertical and Overhead	22	150	100	4.0
	25	225	170	to
	27	275	220	7.6

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 and in American National Standards Z49.1, "Safety in Welding and Cutting," published by the American Welding Society, 550 NW Lejeune Road, Miami, Florida, 33126, and OSHA Safety and Health Standards 29 CFR 1910, available from the U.S. Department of Labor, Washington, D.C. 20210.