



TM-81N1

GAS-SHIELDED FLUX-CORED WIRE
AWS E80T1-Ni1C H8, E80T1-Ni1M H8

061222 (replaces - 061218)

TM-81N1 is comparable to E8018-C3 covered electrodes in deposit composition and properties. In many applications, TM-81N1 is more economical to use than stick electrodes. It is recommended for petro-chemical applications where deposit nickel must be kept low for weathering-steel fabrication where color match is not required, and for mining and earthmoving equipment and other fabrication where low temperature impact values are needed. The unique slag system of this wire provides the welder appeal found with acid slag (EXXT-1) products and the mechanical properties normally associated with basic slag wires. Weld metal diffusible hydrogen levels also rival those of basic slag (EXXT-5) wires, making this an excellent choice for the more demanding applications. The wire is intended for use with 100% CO₂ or a 75% Ar/25% CO₂ gas mixture for shielding.

PRODUCT CHARACTERISTICS:

- 1% nickel weld metal
- Provides good toughness at low temperatures
- Intended for welding steels requiring good CVN values at sub-zero temperatures
- Excellent welder appeal
- Low weld metal hydrogen levels approach those of an EXXT-5 wire

SPECIFICATIONS:

E80T1-Ni1C H8, E80T1-Ni1M H8 per AWS A5.29, ASME SFA 5.29
 ABS to AWS E80T1-Ni1
 CWB 100% CO₂ E80T1-Ni1 H16, 90% Ar/10% CO₂ E80T1-Ni1M H16
 Military Spec MIL-E-24403/1 Class MIL-80T1-Ni1C (CO₂ only)

SHIELDING GAS:

100% CO₂, 75% Ar/25% CO₂, 35-50 cfh

WELDING POSITIONS:

Flat and horizontal

STANDARD DIAMETERS:

1/16", 5/64", 3/32"

WELD TEST PARAMETERS:

TM-81N1 3/32" diameter electrode was welded using 100% CO₂ shielding gas with flow rate of 40 cfh, 425 amps (174 ipm), DCEP, and 29 volts with 1" electrical stickout and 300° ± 25°F interpass temperature. A total of six layers were welded, with one full pass for Layer 1 and two passes each for Layers 2 through 6. The direction of travel was reversed for each layer.

TYPICAL UNDILUTED WELD METAL CHEMISTRY*:

	C	Mn	Si	P	S	Ni
100% CO₂	0.10	0.89	0.38	0.011	0.008	0.98
75% Ar/25% CO₂	0.08	1.29	0.43	0.007	0.011	0.91

TYPICAL MECHANICAL PROPERTIES*:

	75% Ar/25% CO ₂	100% CO ₂
Tensile Strength	91,000 psi (628 MPa)	90,700 psi (626 MPa)
Yield Strength	76,000 psi (524 MPa)	76,800 psi (530 MPa)
Elongation	25%	24%
CVN @ -20°F (-29°C)	52 ft•lbs (71 J)	46 ft•lbs (62 J)

*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.

Diameter, Electrical Stickout (ES) Position	Arc Voltage (volts)	Current DCEP (+) (amps)	Approx. Wire Feed Speed (in/min)	Deposition Rate (lbs/hr)
1/16" 1" ± 1/4" Flat and Horizontal	25 30 40	275 350 500	175 270 490	11.8 to 21.8
5/64" 1" to 1-1/4" Flat and Horizontal	29 32 42	350 425 600	145 225 390	10.8 to 24.2
3/32" 1" to 1-1/4" Flat and Horizontal	29 32 41	400 450 650	130 160 300	11.5 to 23.3

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 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.