

**TRU-CORE™ FC 81T-Ni1M**  
AWS E81T1-Ni1M H4



**PRODUCT DESCRIPTION:**

Tru-Core FC 81T-Ni1M is a low alloy steel electrode for gas shielded, flux cored arc welding of those carbon and low alloy steels requiring a minimum tensile strength of 80 ksi and good CVN values at temperatures of -40°F and lower. This electrode is intended for welding in all positions, both single and multiple pass welds, using a shielding gas blend of 75-80% Argon/Carbon Dioxide. The arc transfer is a smooth, small droplet mode, with very little spatter residue. The slag freezes quickly enough to facilitate welding in all positions, but provides the type of flow and wetting properties to allow good bead geometry and tie in, even in horizontal fillets.

**Flux Cored, Gas Shielded,  
Carbon Steel Electrode**

**CLASSIFICATIONS & APPROVALS:**

- AWS A5.29: E81T1-Ni1M H4
- ASME SFA 5.29: E81T1-Ni1M H4

PRODUCT FEATURES	
Excellent mechanical properties	Fast-freezing slag system
Good bead geometry	Smooth arc transfer
Virtually no spatter	Excellent feedability
Good low-temperature CVN properties	Better sidewall fusion than solid electrodes

**WELDING POSITIONS:**

All position welding is possible when using the correct shielding gas blends, welding process and parameters.

**TYPICAL APPLICATIONS :**

Tru-Core FC 81T-Ni1M is well suited to those applications where any combination of all position welding, good welder appeal, a minimum tensile strength of 80 ksi, good CVN values at lower temperatures, and the ability to weld on plate thicknesses from ¼" to heavy plate sections is required. Some examples are:

- Offshore oil structures
- Subsea components of oil and gas systems
- Earthmoving equipment
- Mining machinery
- Power generation equipment
- Shipbuilding

**MANUFACTURING ADVANTAGES:**

- Patented forming, feeding and drawing equipment
- Consistent strip-to-core ratio
- Precise thermal treatment that controls the type, amount and uniformity of surface oxides on the wire
- Consistent, low diffusible hydrogen levels

**TYPICAL APPLICATION SHIELDING GAS BLENDS:**

- 75-80% Argon/Balance CO<sub>2</sub>
- Flow Rate: 35-45 CFH

**WIRE DIAMETERS (in):**

.045	.052	.062
------	------	------

	AWS/ASME REQ.	75% Ar / 25% CO <sub>2</sub>
<b>TYPICAL WELD METAL COMPOSITION</b>		
<b>CARBON (C)</b>	0.12 (max.)	0.04
<b>MANGANESE (Mn)</b>	1.50 (max.)	1.38
<b>SILICON (Si)</b>	0.80 (max.)	0.54
<b>SULPHUR (S)</b>	0.030 (max.)	0.009
<b>PHOSPHORUS (P)</b>	0.030 (max.)	0.009
<b>NICKEL (Ni)</b>	0.080 – 1.10	0.97
<b>CHROMIUM (Cr)</b>	0.15 (max.)	0.03
<b>MOLYBDENUM (Mo)</b>	0.35 (max.)	0.00
<b>VANADIUM (V)</b>	0.05 (max.)	0.05
<b>TYPICAL MECHANICAL PROPERTIES</b>		
<b>TENSILE STRENGTH (ksi)</b>	80 – 100	99.1
<b>YIELD STRENGTH (ksi)</b>	68 (min.)	88.3
<b>ELONGATION (% IN 2")</b>	19 (min.)	26
<b>CVN @ -20°F (-29°C)</b>	20 ft-lbf	55.7 ft-lbf
<b>TYPICAL DIFFUSIBLE HYDROGEN – AWS A4.3 REQUIREMENTS</b>		
<b>ml /100g</b>	4.0 (max.)	3.5



### APPROXIMATE WELDING PARAMETERS: FLUX CORED WIRE-ALL POSITIONS

DIAMETER (in)	POLARITY	AMPERAGE		VOLTAGE		WIRE FEED SPEED (in/min)		CTWD (in)	SHIELDING GAS
		Min.	Max.	Min.	Max.	Min.	Max.		
.045	DCEP	145	200	23	25	270	330	5/8	100% CO <sub>2</sub> or 75-80% Argon/Balance CO <sub>2</sub>
.052	DCEP	150	215	24	26	200	245	5/8	100% CO <sub>2</sub> or 75-80% Argon/Balance CO <sub>2</sub>
1/16 (.062)	DCEP	165	220	24	26	130	160	3/4	100% CO <sub>2</sub> or 75-80% Argon/Balance CO <sub>2</sub>

### APPROXIMATE WELDING PARAMETERS: FLUX CORED WIRE-FLAT AND HORIZONTAL POSITIONS

DIAMETER (in)	POLARITY	AMPERAGE		VOLTAGE		WIRE FEED SPEED (in/min)		CTWD (in)	SHIELDING GAS
		Min.	Max.	Min.	Max.	Min.	Max.		
.045	DCEP	120	270	23	28	200	500	5/8	100% CO <sub>2</sub> or 75-80% Argon/Balance CO <sub>2</sub>
.052	DCEP	160	315	24	29	225	425	5/8	100% CO <sub>2</sub> or 75-80% Argon/Balance CO <sub>2</sub>
1/16 (.062)	DCEP	260	360	25	30	250	325	3/4	100% CO <sub>2</sub> or 75-80% Argon/Balance CO <sub>2</sub>

#### PACKAGES

33-lb. Fiber Spool - Random Wound

50-lb. Fiber Spool - Random Wound

60-lb. Coil - Random Wound

500-lb. Drum Pack

500-lb. Smart Pak™ - 100% Recyclable

600-lb. Drum Pack

600-lb. Smart Pak™ - 100% Recyclable

600-lb. Wood Reel

600-lb. Tru-Trac® 

Note: See "Premium Packaging Options" for full description of packages. For additional packages, please contact NS Customer Service at 1-800-777-1618.

 Exclusive to NS customers.

#### DISCLAIMER:

The information contained or otherwise referenced herein is presented only in "typical" without guarantee or warranty, and National Standard expressly disclaims any liability incurred from any reliance thereon. Typical data are obtained when welded and tested in accordance with AWS specifications. 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 National Standard LLC.

For Material Safety Data Sheets (MSDS) and Certificates of Compliance, visit our website at [www.nationalstandard.com](http://www.nationalstandard.com)