Premium Welding Wire Technical Bulletin

TRU-CORE™ FC 81T-Ni1

AWS E81T1-Ni1C

NATIONAL STANDARD

PRODUCT DESCRIPTION:

Tru-Core FC 81T-Ni1 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 of 100% 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

PRODUCT FEATURES	
Excellent mechanical properties	Fast-freezing slag system
Good bead geometry	Smooth arc transfer
Good low-temperature CVN properties	Excellent feedability
Better sidewall fusion than solid electrodes	

CLASSIFICATIONS & APPROVALS:

- AWS A5.29: E81T1-Ni1C
- ASME SFA 5.29: E81T1-Ni1C

WELDING POSITIONS:

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

TYPICAL APPLICATIONS :

Tru-Core FC 81T-Ni1 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. 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 diffusible hydrogen levels

TYPICAL APPLICATION SHIELDING GAS BLENDS:

- 100% CO_2
- Flow Rate: 35-45 CFH

WIRE DIAMETERS (in):

.045	.052	.062

	AWS/ASME REQ.	100% CO_2
TYPICAL WELD METAL COMPOSITION		
CARBON (C)	0.12 (max.)	0.04
MANGANESE (Mn)	1.50 (max.)	1.23
SILICON (Si)	0.80 (max.)	0.45
SULPHUR (S)	0.030 (max.)	0.007
PHOSPHORUS (P)	0.030 (max.)	0.006
NICKEL (Ni)	0.80 – 1.10	0.99
CHROMIUM (Cr)	0.15 (max.)	0.05
MOLYBDENUM (Mo)	0.35 (max.)	0.001
VANADIUM (V)	0.05 (max.)	0.02
TYPICAL MECHANICAL PROPERTIES		
TENSILE STRENGTH (ksi)	80 – 100	85.9
YIELD STRENGTH (ksi)	68 (min.)	76
ELONGATION (% IN 2")	19 (min.)	29
CVN @ -20°F (-29°C)	20 ft-lbf	77.7 ft-lbf

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405-372-7954 (fax)

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FLUX CORED WELDING PARAMETERS

NS NATIONAL STANDARD

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_2 or 75-80% Argon/Balance CO_2
.052	DCEP	150	215	24	26	200	245	5/8	100% CO_2 or 75-80% Argon/Balance CO_2
1/16 (.062)	DCEP	165	220	24	26	130	160	3/4	100% CO_2 or 75-80% Argon/Balance CO_2

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_2 or 75-80% Argon/Balance CO_2
.052	DCEP	160	315	24	29	225	425	5/8	100% CO_2 or 75-80% Argon/Balance CO_2
1/16 (.062)	DCEP	260	360	25	30	250	325	3/4	100% CO_2 or 75-80% Argon/Balance CO_2

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® NS

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

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

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