



ISO 9001:2015 REGISTERED  
Certificate No.: 50040 & 50415

## E81T1-W2C/W2M DATA SHEET

### Pinnacle Alloys E81T1-W2C/W2M

AWS CLASS E81T1-W2C, E81T1-W2M

#### CODE AND SPECIFICATION DATA:

AWS A5.29 ASME SFA 5.29; UNS W20131

#### DESCRIPTION:

Pinnacle Alloys E81T1-W2C/W2M has a nominal composition (wt-%) of 0.5 Cu with additions of Cr and Ni to increase strength ductility and notch toughness in the weld metal. These electrodes have been designed to produce weld metal that matches the corrosion resistance and the coloring of the ASTM weathering-type structural steels. Typical applications include ASTM A 242 and A 588. These steels are typically used in bridge construction and other structural components used in highway construction. Preheat and interpass temperatures are typically kept between 275-325°F. This filler metal is used in the as welded condition.

**DIAMETERS:** .045", .052", 1/16"

**WELDING POSITIONS:** All positions



#### TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)	
		100% CO <sub>2</sub>	75% Ar/ 25% CO <sub>2</sub>
Carbon (C)	0.12	0.06	0.06
Chromium (Cr)	0.45-0.70	0.53	0.57
Copper (Cu)	0.30-0.75	0.43	0.46
Manganese (Mn)	0.50-1.30	0.94	1.05
Nickel (Ni)	0.40-0.80	0.66	0.72
Phosphorus (P)	0.03	0.006	0.006
Silicon (Si)	0.35-0.80	0.41	0.49
Sulfur (S)	0.03	0.008	0.008

NOTE: Single values are maximums.

[www.pinnaclealloys.com](http://www.pinnaclealloys.com)

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### TYPICAL MECHANICAL PROPERTIES:

100% CO <sub>2</sub> Shielding Gas	AWS Spec (min)	As Welded
Ultimate Tensile Strength	80,000-100,000 psi (550-690 MPa)	86,500 psi (595 MPa)
Yield Strength	68,000 psi (470 MPa)	71,200 psi (490 MPa)
Percent Elongation in 2"	19%	25%
CVN @ -20°F (-30°C)	20 ft•lb <sub>f</sub> (27 Joules)	31 ft•lb <sub>f</sub> (42 Joules)

75% Ar/ 25% CO <sub>2</sub> Shielding Gas	AWS Spec (min)	As Welded
Ultimate Tensile Strength	80,000-100,000 psi (550-690 MPa)	91,300 psi (630 MPa)
Yield Strength	68,000 psi (470 MPa)	78,800 psi (540 MPa)
Percent Elongation in 2"	19%	24%
CVN @ -20°F (-30°C)	20 ft•lb <sub>f</sub> (27 Joules)	28 ft•lb <sub>f</sub> (38 Joules)

### TYPICAL WELDING PARAMETERS:

Diameter	Position	Optimum			Amperage Range	Voltage Range
		Amperage	Voltage	WFS (ipm)		
.045"	Flat	250	28	450	100-300	21-32
	Overhead	190	26	305	150-280	21-29
	Vertical Up	190	25	305	100-230	21-28
.052"	Flat	300	28	440	100-330	19-32
	Overhead	200	26	245	150-310	21-28
	Vertical Up	200	25	245	150-280	21-27
1/16"	Flat	350	29	350	150-400	22-34
	Overhead	225	26	180	150-310	22-28
	Vertical Up	225	25	180	150-280	22-27

**NOTE:** Parameters reflect CO<sub>2</sub> shielding gas - reduce by 1-1½ volts when using 75-80% Ar/ balance CO<sub>2</sub>. Maintaining a proper welding procedure, including pre-heat and interpass temperatures, may be critical depending on the type and thickness of steel being welded.

**NOTICE:** The results reported are based upon testing of the product under controlled laboratory conditions in accordance with American Welding Society Standards. Actual use of the product may produce different results due to varying conditions. An example of such conditions would be electrode size, plate chemistry, environment, weldment design, fabrication methods, welding procedure and service requirements. Thus the results are not guarantees for the use in the field. The manufacturer disclaims any warranty of merchantability of fitness for any particular purpose with respect to its products.

**CAUTION:** Consumers should be thoroughly familiar with the safety precautions on the warning label posted in each shipment and in the American National Standards A49.1, "Safety in Welding and Cutting," published by the American Welding Society, 8669 NW 36 Street, #130, Miami, FL 33126: OSHA Safety and Health Standards 29 CFR 1910 is available from the U.S. Department of Labor, Washington, D.C. 20210.

Pinnacle Alloys SDS sheets may be obtained on the website below.

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