



Pinnacle Alloys are products of SOWESCO

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

## E81T1-B2C/B2M DATA SHEET

### Pinnacle Alloys E81T1-B2C/B2M

AWS CLASS E81T1-B2C, E81T1-B2M

#### CODE AND SPECIFICATION DATA:

AWS A5.29 ASME SFA 5.29; UNS W52031

#### DESCRIPTION:

Pinnacle Alloys E81T1-B2C/B2M has a nominal composition (wt-%) of 1.25 Cr, 0.5 Mo. Filler metals of this classification are used to weld  $\frac{1}{2}\text{Cr}-\frac{1}{2}\text{Mo}$ ,  $1\text{Cr}-\frac{1}{2}\text{Mo}$ ,  $1\frac{1}{4}\text{Cr}-\frac{1}{2}\text{Mo}$  steels for elevated temperatures and corrosive service. These creep resistant steels are typically used in chemical industries for heat exchangers, boilers, piping and pressure vessels at service temperatures up to 1000°F. Careful control of preheat, interpass temperatures, and post heat is essential to avoid cracking. These electrodes are classified after post weld heat treatment. Special care must be used when using them in the as-welded condition due to high strength levels. Preheat and interpass temperatures are typically kept between 325-375°F. This filler metal is used in the PWHT condition, typically around 1275°F for one hour.

**DIAMETERS:** .035", .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)	0.05-0.12	0.07	0.09
Chromium (Cr)	1.00-1.50	1.31	1.32
Manganese (Mn)	1.25	0.81	0.85
Molybdenum (Mo)	0.40-0.65	0.45	0.49
Phosphorus (P)	0.03	0.01	0.01
Silicon (Si)	0.80	0.60	0.60
Sulfur (S)	0.03	0.01	0.01

NOTE: Single values are maximums.



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### TYPICAL MECHANICAL PROPERTIES:

100% CO <sub>2</sub> Shielding Gas	AWS Spec (min)	SR 1 HR @ 1275°F
Ultimate Tensile Strength	80,000-100,000 psi (550-690 MPa)	94,200 psi (650 MPa)
Yield Strength	68,000 psi (470 MPa)	84,200 psi (580 MPa)
Percent Elongation in 2"	19%	20%

75% Ar/ 25% CO <sub>2</sub> Shielding Gas	AWS Spec (min)	SR 1 HR @ 1275°F
Ultimate Tensile Strength	80,000-100,000 psi (550-690 MPa)	98,900 psi (680 MPa)
Yield Strength	68,000 psi (470 MPa)	85,200 psi (590 MPa)
Percent Elongation in 2"	19%	22%

### TYPICAL WELDING PARAMETERS:

Diameter	Position	Optimum			Amperage Range	Voltage Range
		Amperage	Voltage	WFS (ipm)		
.045"	Flat	250	28	450	130-300	21-32
	Overhead	190	26	305	150-280	21-30
	Vertical Up	190	25	305	130-260	21-29
.052"	Flat	275	28	400	140-330	19-32
	Overhead	200	26	245	150-290	21-28
	Vertical Up	200	25	245	140-270	21-27
1/16"	Flat	330	29	330	150-400	22-34
	Overhead	225	26	180	150-310	22-28
	Vertical Up	225	25	180	150-280	22-26

**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.

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