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ISO 9001:2008 REGISTERED
Certificate No.: 50040 & 50415

E81T1-B6M DATA SHEET

Pinnacle Alloys E81T1-B6M

AWS CLASS E81T1-B6M

CODE AND SPECIFICATION DATA:

AWS A5.29 ASME SFA 5.29; UNS W50231

DESCRIPTION:

Pinnacle Alloys E81T1-B6M has a nominal composition (wt-%) of 5 Cr, 0.5 Mo. Filler metals of this classification are used to weld materials of similar composition, usually in the form of pipe or tubing, such as ASTM A 387 Gr 5, A 213 Gr T5, and A 182 Gr F5. The alloy is air-hardening material and, therefore, when welding with this filler metal, preheat and post weld heat treatment are required. These creep resistant steels are typically used in chemical industries for heat exchangers, boilers, piping and pressure vessels at service temperatures up to 1100°F. Preheat and interpass temperatures are typically kept between 300-500°F. This filler metal is used in the PWHT condition, typically around 1375°F for two hours.

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

WELDING POSITIONS: All positions



TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)
		75% Ar/ 25% CO ₂
Carbon (C)	0.05-0.12	0.08
Chromium (Cr)	4.00-6.00	4.85
Copper (Cu)	0.50	0.05
Manganese (Mn)	1.25	0.47
Molybdenum (Mo)	0.45-0.65	0.56
Nickel (Ni)	0.40	0.02
Phosphorus (P)	0.04	0.006
Silicon (Si)	1.00	0.27
Sulfur (S)	0.03	0.01

NOTE: Single values are maximums.

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TYPICAL MECHANICAL PROPERTIES:

75% Ar/ 25% CO ₂ Shielding Gas	AWS Spec (min)	SR 2 HR @ 1375°F
Ultimate Tensile Strength	80,000-100,000 psi (550-690 MPa)	89,000 psi (620 MPa)
Yield Strength	68,000 psi (470 MPa)	71,200 psi (490 MPa)
Percent Elongation in 2"	19%	19.9%
CVN @ 70°F (20°C)	Not required	60 ft•lb _f (82 Joules)

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	22-27

NOTE: Parameters reflect using 75-80% Ar/ balance CO₂ shielding gas. 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.