



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

E91T1-B3C/B3M DATA SHEET

Pinnacle Alloys E91T1-B3C/B3M

AWS CLASS E91T1-B3C, E91T1-B3M

CODE AND SPECIFICATION DATA:

AWS A5.29 ASME SFA 5.29; UNS W53031

DESCRIPTION:

Pinnacle Alloys E91T1-B3C/B3M has a nominal composition (wt-%) of 2.25 Cr, 1 Mo. Filler metals of this classification are used to weld materials such as ASTM A 387 Gr 21 & 22, A 182 F22, and A 335 P22. 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. Careful control of preheat, interpass temperatures, and post heat is essential to avoid cracking. These electrodes are classified after post weld heat treatment. 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: .045", .052", 1/16"

WELDING POSITIONS: All positions



TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)	
		100% CO ₂	75% Ar/ 25% CO ₂
Carbon (C)	0.05-0.12	0.08	0.08
Chromium (Cr)	2.00-2.50	2.27	2.35
Manganese (Mn)	1.25	0.51	0.54
Molybdenum (Mo)	0.90-1.20	0.99	0.98
Phosphorus (P)	0.03	0.01	0.01
Silicon (Si)	0.80	0.59	0.62
Sulfur (S)	0.03	0.01	0.01

NOTE: Single values are maximums.

www.pinnaclealloys.com

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TYPICAL MECHANICAL PROPERTIES:

100% CO ₂ Shielding Gas	AWS Spec (min)	SR 1 HR @ 1275°F
Ultimate Tensile Strength	90,000-110,000 psi (620-760 MPa)	102,100 psi (705 MPa)
Yield Strength	78,000 psi (540 MPa)	87,400 psi (600 MPa)
Percent Elongation in 2"	17%	18%

75% Ar/ 25% CO ₂ Shielding Gas	AWS Spec (min)	SR 1 HR @ 1275°F
Ultimate Tensile Strength	90,000-110,000 psi (620-760 MPa)	105,300 psi (725 MPa)
Yield Strength	78,000 psi (540 MPa)	87,700 psi (605 MPa)
Percent Elongation in 2"	17%	19%

TYPICAL WELDING PARAMETERS:

Diameter	Position	Optimum			Amperage Range	Voltage Range
		Amperage	Voltage	WFS (ipm)		
.045"	Flat	250	28	282	100-300	21-32
	Overhead	200	26	265	150-280	21-29
	Vertical Up	200	25	265	100-230	21-28
.052"	Flat	300	28	360	100-330	19-32
	Overhead	225	26	245	150-310	21-28
	Vertical Up	225	25	245	150-280	21-27
1/16"	Flat	350	29	300	150-400	22-34
	Overhead	225	26	160	150-310	22-28
	Vertical Up	225	25	160	150-280	22-27

NOTE: Parameters reflect CO₂ shielding gas - reduce by 1-1½ volts when using 75-80% Ar/ balance CO₂. 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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