AN ISO 9001:2015 COMPANY
CERTIFICATE NO.: C755336

EB91 (EB9) DATA SHEET

Pinnacle Alloys EB91
AWS CLASS EB91
CODE AND SPECIFICATION DATA:
AWS A5.23 ASME SFA 5.23; UNS S50482

DESCRIPTION:
Pinnacle Alloys EB91 is a copper-coated solid wire for submerged arc welding with 9% Cr and 1% Mo content to be used for the welding of creep resistant steel. It is used in the petro-chemical industry for welding P91 steels. Long term creep properties get improved thanks to small additions of niobium, vanadium, and nitrogen. This wire is designed for elevated temperature service up to 1200°F (650°C). It is used in fossil fuelled power generating plants for components such as headers, main steam piping, and turbine castings. Base materials that can be welded include A182 Gr F91, A199 Gr T91, A213 Gr T91, A217 Gr C12A, A335 Gr P91, A336 Gr F91, and A387 Gr 91. This material is designed to be used with basic fluxes. Typical preheat and interpass temperatures are between 400°F-600°F. Prior to PWHT cool to below 200°F. PWHT is typically performed at 1400°F for two hours minimum. In multipass welding it is recommended to accurately clean the surface of the material to be welded by grinding off the surface layer of chrome oxide.

In AWS A5.23-07 and previous revisions, electrodes classified as EB91 were classified as EB9. The composition ranges have not been changed from A5.23-07 for the corresponding classification. The EB91 classification should be considered as identical to the corresponding EB9 classification of A5.23-07.

DIAMETERS: 3/32”, 1/8”, 5/32”

WELDING POSITIONS: Flat and horizontal fillet only

www.pinnaclealloys.com
9384 Wallisville Road • Houston, Texas 77013 • **1-800-856-9353** • (713) 688-9353 • Fax (713) 688-6985
2602 S. 50th Avenue • Phoenix, Arizona 85043 • **1-866-442-9353** • (602) 442-9353 • Fax (602) 442-9354

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TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)
Aluminum (Al)	0.04	0.005
Carbon (C)	0.07-0.13	0.10
Chromium (Cr)	8.50-10.50	8.80
Copper (Cu)	0.10	0.04
Manganese (Mn)	1.25	0.60
Molybdenum (Mo)	0.85-1.15	0.95
Nickel (Ni)	1.00	0.60
Niobium (Nb)	0.02-0.10	0.06
Nitrogen (N)	0.03-0.07	0.045
Phosphorus (P)	0.010	0.005
Silicon (Si)	0.50	0.20
Sulfur (S)	0.010	0.003
Vanadium (V)	0.15-0.25	0.20

NOTE: Single values are maximums.

TYPICAL MECHANICAL PROPERTIES:

To be determined based upon wire/flux combination.

TYPICAL WELDING PARAMETERS:

	Diameter	Type of Current	Amperage	Volts
SAW	3/32”	DCEP or AC	350-450	27-30
	1/8”	DCEP or AC	430-530	27-30
	5/32”	DCEP or AC	480-580	27-30

NOTE: Contact SOWESCO technical support for information on wire/flux combination recommendations at the number below. Maintaining a proper welding procedure, including pre-heat and interpass temperatures, may be critical depending on the type and thickness of material 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 CRF 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.