AN ISO 9001:2015 COMPANY
CERTIFICATE NO.: C755336

# E90C-D2 DATA SHEET

**Pinnacle Alloys E90C-D2**
AWS CLASS E90C-D2
**CODE AND SPECIFICATION DATA:**
AWS A5.28 ASME SFA 5.28; UNS W19230

**DESCRIPTION:**
Pinnacle Alloys E90C-D2 has a nominal composition (wt-%) of 0.5 Mo. This metal cored electrode can be substituted for ER90S-D2 solid wire applications. It offers many economic and quality advantages, such as less sensitivity to subsurface porosity, the elimination of "cold lap," or fusion discontinuities, and higher travel speeds. Pinnacle Alloys E90C-D2 is typically used in applications requiring weld metal which matches the mechanical properties of high strength, low alloy pressure vessel steels, such as ASTM A 302 Gr B, HSLA steels, and manganese-molybdenum castings, such as ASTM A 291 and A 735.

**DIAMETERS:** .035", .045", .052", 1/16"

**WELDING POSITIONS:** Flat and horizontal fillets only

**TYPICAL DEPOSIT COMPOSITION:**

| | AWS Spec | Weld Metal Analysis (%) |
|---|---|---|
| Carbon (C) | 0.12 | 0.07 |
| Copper (Cu) | 0.35 | 0.05 |
| Manganese (Mn) | 1.00-1.90 | 1.42 |
| Molybdenum (Mo) | 0.40-0.60 | 0.50 |
| Phosphorus (P) | 0.025 | 0.007 |
| Silicon (Si) | 0.90 | 0.57 |
| Sulfur (S) | 0.03 | 0.009 |
| Vanadium (V) | 0.03 | 0.01 |

NOTE: Single values are maximums.

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 MECHANICAL PROPERTIES:

| | AWS Spec (min) | As Welded* |
|---|---|---|
| Ultimate Tensile Strength | 90,000 psi (620 MPa) | 98,400 psi (680 MPa) |
| Yield Strength | 78,000 psi (540 MPa) | 86,900 psi (590 MPa) |
| Percent Elongation in 2” | 17% | 27% |
| CVN @ -20°F (-30°C) | 20 ft•lb$_f$ (27 Joules) | 35 ft•lb$_f$ (47 Joules) |

*With 98% Ar/ 2% $O_2$ shielding gas.

## TYPICAL WELDING PARAMETERS:

| Diameter | Amperage | WFS (ipm) | Amperage Range | Voltage Range |
|---|---|---|---|---|
| .045” | **255** | **410** | 180-330 | 24-30 |
| .052” | **300** | **350** | 220-460 | 22-32 |
| 1/16” | **360** | **300** | 240-520 | 23-34 |

**NOTE: Optimum conditions are in boldface type. These values were calculated using optimum parameters and DCEP polarity. 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 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.