Pinnacle Alloys

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

# E71T-12C/12M DATA SHEET

**Pinnacle Alloys E71T-12C/12M**
AWS CLASS E71T-1C, E71T-1M, E71T-9C, E71T-9M, E71T-12C, E71T-12M
**CODE AND SPECIFICATION DATA:**
AWS A5.20 ASME SFA 5.20; UNS W07601, W07609, & W07612

**DESCRIPTION:**
Pinnacle Alloys E71T-12C/12M is a carbon steel electrode designed for single and multipass welding of carbon and certain low alloy steels. These electrodes are designed for use with DCEP power sources. They are characterized by a spray transfer, low spatter loss, flat to slightly convex bead contour, and a moderate volume of slag which completely covers the weld bead. These electrodes have a rutile base slag and have the ability to produce high deposition rates. The "-12" suffix indicates that the classification has been formulated to have good impact toughness and to meet the lower manganese requirements of the A-No. 1 Analysis Group in the ASME *Boiler and Pressure Vessel Code,* Section IX. They, therefore, have an accompanying decrease in tensile strength and hardness. Typical applications include ship building, structural fabrication, general fabrication, offshore structures, and piping. Typical base metal specifications for these steels are ASTM A 516, A 572, and materials with similar composition and strength.

**DIAMETERS:** .045", .052", 1/16", 5/64", 3/32"

**WELDING POSITIONS:** All positions

**TYPICAL DEPOSIT COMPOSITION:**

| | AWS Spec | Weld Metal Analysis (%) | |
|---|---|---|---|
| | | 100% $CO_2$ | 75% Ar/ 25% $CO_2$ |
| Carbon (C) | 0.12 | 0.05 | 0.05 |
| Manganese (Mn) | 1.60 | 1.24 | 1.36 |
| Phosphorus (P) | 0.03 | 0.01 | 0.01 |
| Silicon (Si) | 0.90 | 0.55 | 0.53 |
| Sulfur (S) | 0.03 | 0.02 | 0.01 |

NOTE: Single values are maximums.

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## TYPICAL MECHANICAL PROPERTIES:

| 100% $CO_2$ Shielding Gas | AWS Spec (min) | As Welded |
|---|---|---|
| Ultimate Tensile Strength | 70,000-90,000 psi (490-620 MPa) | 81,500 psi (550 MPa) |
| Yield Strength | 58,000 psi (390 MPa) | 70,600 psi (510 MPa) |
| Percent Elongation in 2” | 22% | 26% |
| CVN @ -20°F (-30°C) | 20 ft•$lb_f$ (27 Joules) | 70 ft•$lb_f$ (75 Joules) |
| CVN @ 0°F (-20°C) | Not required | 74 ft•$lb_f$ (95 Joules) |

| 75% Ar/ 25% $CO_2$ Shielding Gas | AWS Spec (min) | As Welded |
|---|---|---|
| Ultimate Tensile Strength | 70,000-90,000 psi (490-620 MPa) | 86,200 psi (605 MPa) |
| Yield Strength | 58,000 psi (390 MPa) | 77,700 psi (540 MPa) |
| Percent Elongation in 2” | 26% | 27% |
| CVN @ -20°F (-30°C) | 20 ft•$lb_f$ (27 Joules) | 77 ft•$lb_f$ (90 Joules) |
| CVN @ 0°F (-20°C) | Not required | 80 ft•$lb_f$ (110 Joules) |

## 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 $CO_2$ 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 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.

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