



## E7018/E7018-1 DATA SHEET

**Pinnacle Alloys E7018/E7018-1**

AWS CLASS E7018, E7018-1 H4R

**CODE AND SPECIFICATION DATA:**

AWS A5.1 ASME SFA 5.1; UNS W07018

**DESCRIPTION:**

Pinnacle Alloys E7018/E7018-1 low-hydrogen electrodes can be used with either AC or DCEP. These electrodes have mineral coverings which are high in limestone and other ingredients that are low in moisture and hence produce weld deposits "low in hydrogen content." As is common with all low-hydrogen electrodes, a short arc length should be maintained at all times. In addition to their use on carbon steel, the E7018 electrodes are used for joints involving high-strength, high-carbon, or low-alloy steels. Electrodes with other than low-hydrogen coverings may produce "hydrogen-induced cracking" in those steels. The fillet welds made in the horizontal and flat welding positions have a slightly convex weld face, with a smooth and finely rippled surface. These electrodes are characterized by a smooth, quiet arc, very low spatter, and medium arc penetration. These electrodes can be used at high travel speeds. Pinnacle Alloys E7018/E7018-1 electrodes have the manganese content set at the high end of the range. They are intended for welds requiring a lower transition temperature than those available only as E7018 electrodes. Pinnacle Alloys E7018/E7018-1 is an excellent choice for out-of-position tacking, welding low alloy structural, steel structures, field erections, offshore rigs, and power plants.

**TYPE OF CURRENT:** Direct Current Electrode Positive (DCEP) or AC**DIAMETERS:** 3/32", 1/8", 5/32", 3/16", 7/32", 1/4"

**STORAGE & RECONDITIONING:** After opening, store in an oven controlled at 250°F to 300°F to ensure a low hydrogen weld deposit. If the electrode has been exposed to the atmosphere for extended periods of time, place in 250°F oven and slowly increase temperature to 600°F; bake for one hour at 600°F.

**WELDING POSITIONS:** All positions

3/16" is recommended for use in flat and horizontal positions only

**TYPICAL DIFFUSIBLE HYDROGEN BY GAS CHROMATOGRAPHY:** 2.1 ml/100g[www.pinnaclealloys.com](http://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

**TYPICAL DEPOSIT COMPOSITION:**

|                 | <b>AWS Spec</b> | <b>Weld Metal Analysis (%)</b> |
|-----------------|-----------------|--------------------------------|
| Carbon (C)      | 0.15            | 0.05                           |
| Chromium (Cr)   | 0.20            | 0.05                           |
| Manganese (Mn)  | 1.60            | 0.93                           |
| Molybdenum (Mo) | 0.30            | 0.01                           |
| Nickel (Ni)     | 0.30            | 0.04                           |
| Phosphorus (P)  | 0.035           | 0.012                          |
| Silicon (Si)    | 0.75            | 0.38                           |
| Sulfur (S)      | 0.035           | 0.009                          |
| Vanadium (V)    | 0.08            | 0.01                           |

NOTE: Single values are maximums.

**TYPICAL MECHANICAL PROPERTIES:**

| Hermetically Sealed Cans (50#) | <b>AWS Spec (min)</b>             | <b>As Welded</b>                   |
|--------------------------------|-----------------------------------|------------------------------------|
| Ultimate Tensile Strength      | 70,000 psi (490 MPa)              | 77,000 psi (529 MPa)               |
| Yield Strength                 | 58,000 psi (400 MPa)              | 64,000 psi (441 MPa)               |
| Percent Elongation in 2"       | 22%                               | 32%                                |
| CVN @ -50°F (-46°C)            | 20 ft•lb <sub>f</sub> (27 Joules) | 86 ft•lb <sub>f</sub> (117 Joules) |

**TYPICAL WELDING PARAMETERS:**

| <b>Diameter</b> | <b>Type of Current</b> | <b>Amperage</b> | <b>Deposition Rate (lbs/hr)</b> | <b>Amperage Range</b> | <b>Voltage Range</b> |
|-----------------|------------------------|-----------------|---------------------------------|-----------------------|----------------------|
| 3/32"           | <b>DCEP or AC</b>      | <b>90</b>       | <b>1.8</b>                      | 70-110                | 20-24                |
| 1/8"            | <b>DCEP or AC</b>      | <b>130</b>      | <b>2.6</b>                      | 90-160                | 24-28                |
| 5/32"           | <b>DCEP or AC</b>      | <b>170</b>      | <b>3.9</b>                      | 110-230               | 26-30                |
| 3/16"           | <b>DCEP or AC</b>      | <b>250</b>      | <b>5.2</b>                      | 190-300               | 27-31                |
| 7/32"           | <b>DCEP or AC</b>      | <b>290</b>      | <b>7.3</b>                      | 240-340               | 28-32                |
| 1/4"            | <b>DCEP or AC</b>      | <b>350</b>      | <b>8.0</b>                      | 310-390               | 30-34                |

**NOTE:** Optimum conditions are in boldface type. For out of position welding, decrease amperage by 15%. These values were calculated using optimum parameters and DCEP polarity. Allowance made for 2" stub loss. Maintaining a proper welding procedure, including pre-heat and interpass temperatures, may be critical depending on the type and thickness of steel being welded.



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**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.

[www.pinnaclealloys.com](http://www.pinnaclealloys.com)

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