



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

## E12018M DATA SHEET

### Pinnacle Alloys E12018M

AWS CLASS E12018M H4R

#### CODE AND SPECIFICATION DATA:

AWS A5.5 ASME SFA 5.5; UNS W22218

#### DESCRIPTION:

Pinnacle Alloys E12018M are low-hydrogen electrodes originally designed for military applications such as welding HY80 and HY100 type steels. To achieve desired weld metal properties and soundness, these electrodes have small alloy additions (especially some Ni) and require careful control of moisture in the electrode covering. It is important that moisture levels in the coating be maintained during electrode manufacture, packaging, transportation, and sight storage. These electrodes are usually employed without subsequent postweld heat treatment. However, hydrogen-release treatments at lower temperatures, typically less than 500°F, are often applied. In the as-welded condition, the weld-metal mechanical properties include high ultimate tensile strength and good notch toughness at low temperatures. It has quick and easy slag removal, which reduces clean up time. The low spatter level improves weld bead appearance and lends itself to higher deposition. With these properties the Pinnacle Alloys E12018M electrodes are suitable for joining many high-strength, low-alloy or microalloy steels to themselves or to lower strength steels, including carbon steels.

**TYPE OF CURRENT:** Direct Current Electrode Positive (DCEP) or AC

**DIAMETERS:** 3/32", 1/8", 5/32", 3/16"

**STORAGE & RECONDITIONING:** If electrode has been exposed to the atmosphere for an extended period of time, place in 250°F oven and slowly increase temperature to 600°F; bake at 600°F for one hour. After opening, store in holding oven (250°F to 400°F) until used to ensure low hydrogen weld deposit.

**WELDING POSITIONS:** All positions

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



**TYPICAL DIFFUSIBLE HYDROGEN BY GAS CHROMATOGRAPHY:** 2.2 ml/100g

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

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### TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)
Carbon (C)	0.10	0.05
Chromium (Cr)	0.30-1.50	0.63
Manganese (Mn)	1.30-2.25	1.55
Molybdenum (Mo)	0.30-0.55	0.39
Nickel (Ni)	1.75-2.50	1.76
Phosphorus (P)	0.03	0.02
Silicon (Si)	0.60	0.42
Sulfur (S)	0.03	0.013
Vanadium (V)	0.05	0.01

NOTE: Single values are maximums.

### TYPICAL MECHANICAL PROPERTIES:

	AWS Spec (min)	As Welded
Ultimate Tensile Strength	120,000 psi (830 MPa)	130,000 psi (895 MPa)
Yield Strength	108,000-120,000 psi (745-830 MPa)	118,000 psi (814 MPa)
Percent Elongation in 2"	18%	19%
CVN @ -60°F (-50°C)	20 ft•lb <sub>f</sub> (27 Joules)	24 ft•lb <sub>f</sub> (32 Joules)

### TYPICAL WELDING PARAMETERS:

Diameter	Type of Current	Amperage	Deposition Rate (lbs/hr)	Amperage Range	Voltage Range
3/32"	<b>DCEP or AC</b>	<b>100</b>	<b>1.90</b>	70-110	Variable
1/8"	<b>DCEP or AC</b>	<b>135</b>	<b>2.89</b>	90-160	Variable
5/32"	<b>DCEP or AC</b>	<b>170</b>	<b>4.00</b>	130-220	Variable
3/16"	<b>DCEP or AC</b>	<b>250</b>	<b>5.50</b>	200-300	Variable

**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.

**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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