



Pinnacle Alloys are products of SOWESCO

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

## E312-16 DATA SHEET

### Pinnacle Alloys E312-16

AWS CLASS E312-16

#### CODE AND SPECIFICATION DATA:

AWS A5.4 ASME SFA 5.4; UNS W31310

#### DESCRIPTION:

Pinnacle Alloys E312-16 has a nominal composition (wt.-%) of 30 Cr, 9 Ni. These electrodes have been found valuable in welding dissimilar metals, especially when one of the base metals is a stainless steel high in nickel. The deposit is a two-phase weld deposit with substantial amounts of ferrite in an austenitic matrix. Even with considerable dilution by austenite-forming elements, such as nickel, the microstructure remains two-phase and thus highly resistant to weld metal cracks and fissures. Applications should be limited to service temperature below 800°F to avoid formation of secondary brittle phases. Pinnacle Alloys E312-16 is utilized for welding stainless steels to mild steels and for welding high strength steels that are difficult to weld with ferritic electrodes. This electrode is work-hardenable and hot-cracking resistant.

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

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

**WELDING POSITIONS:** All positions  
3/16" is recommended for use in flat and horizontal positions only



#### TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)
Carbon (C)	0.15	0.12
Chromium (Cr)	28.0-32.0	29.0
Copper (Cu)	0.75	0.12
Manganese (Mn)	0.5-2.5	1.70
Molybdenum (Mo)	0.75	0.23
Nickel (Ni)	8.0-10.5	9.50
Phosphorus (P)	0.04	0.03
Silicon (Si)	1.00	0.47
Sulfur (S)	0.03	0.002

NOTE: Single values are maximums.

SOWESCO, LLC

www.pinnaclealloys.com

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#### FERRITE NUMBER AND PITTING RESISTANCE EQUIVALENT NUMBER:

To obtain Ferrite Numbers or PRE<sub>N</sub>, please contact SOWESCO technical support at the number below.

#### TYPICAL MECHANICAL PROPERTIES:

	AWS Spec (min)	As Welded
Ultimate Tensile Strength	95,000 psi (660 MPa)	115,000 psi (795 MPa)
Percent Elongation in 2"	22%	22%

#### TYPICAL WELDING PARAMETERS:

Diameter	Type of Current	Amperage Range		Voltage Range
		Flat	Out of Position	
3/32"	DCEP or AC	70-90	65-80	20-23
1/8"	DCEP or AC	80-110	75-95	21-24
5/32"	DCEP or AC	120-160	100-120	22-25
3/16"	DCEP or AC	170-190	Not recommended	23-26

**NOTE: 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.

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