



E309-16/E309L-16 DATA SHEET

Pinnacle Alloys E309-16/E309L-16

AWS CLASS E309-16, E309L-16

CODE AND SPECIFICATION DATA:

AWS A5.4 ASME SFA 5.4; UNS W30910 (309) & UNS W30913 (309L)

DESCRIPTION:

Pinnacle Alloys E309-16/E309H-16 has a nominal composition (wt.-%) of 23.5 Cr, 13 Ni, with 0.04 max carbon. This carbon content ensures weld deposits with a higher ferrite content than E309H, usually greater than 8 FN, and reduce the possibility of intergranular carbide precipitation. This thereby increases the resistance to intergranular corrosion without the use of niobium (columbium). Pinnacle Alloys E309-16/E309L-16 deposits are not as strong at elevated temperatures as the niobium-stabilized alloy or E309H deposits. This electrode is commonly used for welding dissimilar steels, such as joining Type 304 to mild or low-alloy steel, the welding of clad steel to Type 304 clad steels, welding the first layer of E308L, welding and applying stainless steel sheet linings to carbon steel. Embrittlement or cracking can occur if these dissimilar welds are subjected to a postweld heat treatment or to a service above 700°F. If a postweld heat treatment of the carbon steel is essential, the total procedure, welding and heat treatment, should be proven prior to implementation. Pinnacle Alloys E309-16/E309L-16 is generally used to weld dissimilar joints, clad steels, hardenable steels, and as a buffer layer prior to surfacing.

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

**FERRITE NUMBER AND PITTING RESISTANCE EQUIVALENT NUMBER:**

To obtain Ferrite Numbers or PRE_N, please contact SOWESCO technical support at the number below.

SOWESCO, LLC

www.pinnaclealloys.com

9384 Wallisville Road • Houston, Texas 77013 • **1-800-856-9353** • (713) 688-9353 • Fax (713) 688-6985
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AN ISO 9001:2015 COMPANY
CERTIFICATE NO.: C755336

TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)
Carbon (C)	0.04	0.03
Chromium (Cr)	22.0-25.0	23.5
Copper (Cu)	0.75	0.06
Manganese (Mn)	0.5-2.5	1.80
Molybdenum (Mo)	0.75	0.10
Nickel (Ni)	12.0-14.0	13.0
Phosphorus (P)	0.04	0.02
Silicon (Si)	1.00	0.57
Sulfur (S)	0.03	0.005

NOTE: Single values are maximums.

TYPICAL MECHANICAL PROPERTIES:

	AWS Spec (min)	As Welded
Ultimate Tensile Strength	80,000 psi (550 MPa)	88,000 psi (610 MPa)
Percent Elongation in 2"	30%	38%

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 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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