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

ER320LR DATA SHEET

Pinnacle Alloys ER320LR
AWS CLASS ER320LR
CODE AND SPECIFICATION DATA:
AWS A5.9 ASME SFA 5.9; UNS N08022

DESCRIPTION:
Pinnacle Alloys ER320LR has a nominal composition (wt.-%) of 20 Cr, 34 Ni, 2.5 Mo, 3.5 Cu, with Nb added to provide resistance to intergranular corrosion. The elements C, Si, P, and S are specified at lower maximum levels and the Nb and Mn are controlled at narrow ranges compared to ER320. These requirements reduce the weld metal hot cracking and fissuring (while maintaining the corrosion resistance) frequently encountered in fully austenitic stainless steel weld metals. Consequently, welding practices typically used for austenitic stainless steel weld metals containing ferrite can be used in bare filler metal welding processes such as GTAW and GMAW. Pinnacle Alloys ER320LR filler metal has been used successfully in submerged arc overlay welding, but it may be prone to cracking when used for joining base metal by the submerged arc process. Filler metal of this classification is primarily used to weld base metals of similar composition for applications where resistance to severe corrosion involving a wide range of chemicals, including sulfuric and sulfurous acids and their salts, is required.

DIAMETERS: .030”, .035”, .045”, 1/16”, 3/32”, 1/8”, 5/32”

WELDING POSITIONS: GTAW & GMAW: All positions

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TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)
Carbon (C)	0.025	0.006
Chromium (Cr)	19.0-21.0	20.08
Copper (Cu)	3.00-4.00	3.16
Manganese (Mn)	1.50-2.00	1.85
Molybdenum (Mo)	2.00-3.00	2.40
Nickel (Ni)	32.0-36.0	33.02
Nitrogen (N)	N.S.*	0.019
Phosphorus (P)	0.015	0.011
Silicon (Si)	0.15	0.04
Sulfur (S)	0.02	0.002
Niobium (Nb) + Tantalum (Ta)	(8 x C) min – 0.4 max	0.27

*N.S. means Not Specified.
NOTE: Single values are maximums.

FERRITE NUMBER AND PITTING RESISTANCE EQUIVALENT NUMBER:

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

TYPICAL MECHANICAL PROPERTIES:

	AWS Spec (min)	As Welded
Ultimate Tensile Strength	Not required	81,000 psi (560 MPa)
Percent Elongation in 2”	Not required	38%

TYPICAL WELDING PARAMETERS:

	Diameter	Amperage	Volts	Shielding Gas
GTAW	1/16”	80-110		100% Ar
	3/32”	90-130		
	1/8”	120-175		
	5/32”	150-220		
GMAW Spray Transfer	.030”	130-200	23-27	98% Ar/ 2% O_2 (35 cfh)
	.035”	150-225	23-26	
	.045”	200-325	24-28	
	1/16”	300-350	24-27	
GMAW Short-Circuit	.030”	50-150	14-20	90% He/ 7½% Ar/ 2½% CO_2 (25 cfh)
	.035”	60-200	14-22	
	.045”	75-225	15-23	
	1/16”	100-250	16-23	

SAW	3/32”	275-350	28-30	Suitable Flux
	1/8”	350-450	29-32	

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.