



ER100S-1 DATA SHEET

Pinnacle Alloys ER100S-1

AWS CLASS ER100S-1

CODE AND SPECIFICATION DATA:

AWS A5.28 ASME SFA 5.28; UNS K10882

DESCRIPTION:

Pinnacle Alloys ER100S-1 has a nominal composition (wt-%) of **1.5 Mn, 1.75 Ni, 0.40 Mo**. These filler metals deposit high-strength, very tough weld metal for critical applications. They were originally developed for welding HY80 steel for military applications. They are also used for a variety of structural applications where tensile strength requirements exceed 100ksi, and excellent toughness is required to temperatures as low as -60°F. Mechanical properties obtained from weld deposits of this classification will vary depending on the heat input used. Typical base material applications are ASTM A 514, A 517, and HY80. Preheat and interpass temperatures are typically kept between 275-325°F. PWHT is not required.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32"**WELDING POSITIONS:** All positions

GMAW spray transfer limited to flat and horizontal fillet positions only

**TYPICAL DEPOSIT COMPOSITION:**

	AWS Spec	Weld Metal Analysis (%)
Aluminum (Al)	0.10	0.004
Carbon (C)	0.08	0.069
Chromium (Cr)	0.30	0.04
Copper (Cu)	0.25	0.15
Manganese (Mn)	1.25-1.80	1.58
Molybdenum (Mo)	0.25-0.55	0.35
Nickel (Ni)	1.40-2.10	1.76
Phosphorus (P)	0.01	0.009
Silicon (Si)	0.20-0.55	0.44
Sulfur (S)	0.01	0.005
Titanium (Ti)	0.10	0.002
Vanadium (V)	0.05	0.004
Zirconium (Zr)	0.10	0.002

NOTE: Single values are maximums.

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TYPICAL MECHANICAL PROPERTIES:

	AWS Spec (min)	As Welded (GMAW)	As Welded (GTAW)
Ultimate Tensile Strength	100,000 psi (690 MPa)	110,000 psi (760 MPa)	120,000 psi (830 MPa)
Yield Strength	88,000 psi (610 MPa)	95,700 psi (660 MPa)	110,000 psi (760 MPa)
Percent Elongation in 2"	16%	20%	18%
CVN @ -60°F (-50°C)	50 ft•lb _f (68 Joules)	52 ft•lb _f (70 Joules)	--
CVN @ 68°F (20°C)	Not required	118 ft•lb _f (160 Joules)	118 ft•lb _f (160 Joules)
CVN @ 32°F (0°C)	Not required	--	103 ft•lb _f (140 Joules)
CVN @ -4°F (-20°C)	Not required	103 ft•lb _f (140 Joules)	74 ft•lb _f (100 Joules)
CVN @ -40°F (-40°C)	Not required	66 ft•lb _f (90 Joules)	59 ft•lb _f (80 Joules)
CVN @ -76°F (-60°C)	Not required	--	29 ft•lb _f (40 Joules)

TYPICAL WELDING PARAMETERS:

	Diameter	Amperage	Volts	Shielding Gas
GTAW	3/32"	70-210	9-16	100% Ar
	1/8"	90-280	10-19	
	5/32"	120-320	10-19	
GMAW Spray Transfer	.035"	200-260	26-32	98% Ar/ 2% O ₂
	.045"	240-360	26-34	
	1/16"	270-450	27-38	

NOTE: 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.