AN ISO 9001:2015 COMPANY
CERTIFICATE NO.: C755336

E2209T1-1/4 DATA SHEET

Pinnacle Alloys E2209T1-1/4
AWS CLASS E2209T1-1, E2209T1-4
CODE AND SPECIFICATION DATA:
AWS A5.22 ASME SFA 5.22; UNS W39239

DESCRIPTION:
Pinnacle Alloys E2209T1-1/4 has a nominal composition (wt.-%) of 22 Cr, 8.5 Ni, 3.5 Mo, 0.15 N. This electrode is used to join duplex stainless steel base metals containing approximately 22 wt.-% chromium. The microstructure of the weld deposit consists of a mixture of austenite and ferrite. Because of the two-phase structure, the alloys is one of the family of duplex stainless steel alloys. The alloy has good resistance to stress corrosion cracking and pitting corrosion attack. If postweld annealing is required, this weld metal will require a higher annealing temperature than that required by the duplex base metal. Argon with 20-25% CO_2 is the recommended shielding gas, producing ferrite normally in the range of 25-40 FN. Pinnacle Alloys E2209T1-1/4 is designed to weld similar materials in the chemical and fertilizer industries, off-shore pipelines, sour gas lines, etc. It is used to weld 2205, 2304, and other similar types of duplex stainless steel. It delivers superb performance characteristics in all positions and has little spatter.

TYPE OF CURRENT: Direct Current Electrode Positive (DCEP)

DIAMETERS: .045”, 1/16”

SHIELDING GAS: 100% CO_2, 75-80% Ar/ balance CO_2, 35-50 cfh

WELDING POSITIONS: All positions
1/16” 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.

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TYPICAL DEPOSIT COMPOSITION:

	AWS Spec	Weld Metal Analysis (%)
Carbon (C)	0.04	0.037
Chromium (Cr)	21.0-24.0	23.55
Copper (Cu)	0.75	0.19
Manganese (Mn)	0.5-2.0	1.81
Molybdenum (Mo)	2.5-4.0	2.91
Nickel (Ni)	7.5-10.0	8.64
Nitrogen (N)	0.08-0.20	0.117
Phosphorus (P)	0.04	0.019
Silicon (Si)	1.00	0.77
Sulfur (S)	0.03	0.010

NOTE: Single values are maximums.

TYPICAL MECHANICAL PROPERTIES:

CO_2 Shielding Gas	**AWS Spec (min)**	**As welded**
Ultimate Tensile Strength	100,000 psi (690 MPa)	110,400 psi (760 MPa)
Yield Strength	Not required	79,000 psi (540 MPa)
Percent Elongation in 2”	20%	32%
CVN @ -60°F (-50°C)	Not required	47 ft•lb_f (65 Joules)

75% Ar/25% CO_2 Shielding Gas	**AWS Spec (min)**	**As welded**
Ultimate Tensile Strength	100,000 psi (690 MPa)	113,000 psi (780 MPa)
Yield Strength	Not required	85,000 psi (580 MPa)
Percent Elongation in 2”	20%	31%
CVN @ -60°F (-50°C)	Not required	44 ft•lb_f (60 Joules)

TYPICAL WELDING PARAMETERS:

Diameter	WFS (ipm)	Amperage	Volts	ESO (in.)	Deposition Rate (lbs/hr)
.045”	250	130	22	5/8-3/4”	5.4
	300	**160**	**24**	**5/8-3/4”**	**6.3**
	425	**200**	**26**	**5/8-3/4”**	**9.2**
	780	270	32	5/8-3/4”	16.2
1/16”	150	170	23	3/4-1”	5.4
	195	**215**	**25**	**3/4-1”**	**7.0**
	240	**250**	**26**	**3/4-1”**	**8.6**
	320	305	27	3/4-1”	11.5

Note: Optimum conditions are in boldface type. Parameters reflect CO_2 shielding gas - reduce by 2 volts when using 75-80% Ar/ balance CO_2. 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.