



Pinnacle Alloys are products of SOWESCO

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

E2594T1-4 DATA SHEET

Pinnacle Alloys E2594T1-4

AWS CLASS E2594T1-4

CODE AND SPECIFICATION DATA:

AWS A5.22 ASME SFA 5.22; UNS W39594

DESCRIPTION:

Pinnacle Alloys E2594T1-4 has a nominal composition (wt.-%) of 25.5 Cr, 9.3 Ni, 3.5 Mo, 0.25 N. The sum of the Cr + 3.3(Mo + 0.5W) + 16N, known as the Pitting Resistance Equivalent Number (PRE_N), is at least 40 thereby allowing the weld metal to be called a “super duplex stainless steel.” This number is a semi-quantitative indicator of resistance to pitting in aqueous chloride containing environments. It is designed for the welding of super duplex stainless steels UNS S32750 and S32760 (wrought) and for UNS J93380 and J93404 (cast). Pinnacle Alloys E2594T1-4 can also be used for the welding of UNS S32550, J93370, and J93372 when not subject to sulfurous or sulfuric acids in service. It can also be used for the welding of low alloys steels to duplex stainless steel as well as to weld ‘standard’ duplex stainless steels such as UNS S32305 and J92205 although the weld metal impact toughness may be inferior to that from E2209TX-X electrodes. If postweld annealing is required, this weld metal will require a higher temperature than that required by the duplex base metal. Pinnacle Alloys E2594T1-4 is suitable for marine environments and offshore applications. It delivers superb performance characteristics in all positions, has little spatter, and easy-to-remove slag.

TYPE OF CURRENT: Direct Current Electrode Positive (DCEP)

DIAMETERS: .045”, 1/16”

SHIELDING GAS: 75% Ar/ 25% CO₂, 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	0.03
Chromium (Cr)	24.0-27.0	25.44
Copper (Cu)	1.50	0.17
Manganese (Mn)	0.5-2.5	1.11
Molybdenum (Mo)	2.5-4.5	3.56
Nickel (Ni)	8.0-10.5	9.53
Nitrogen (N)	0.20-0.30	0.25
Phosphorus (P)	0.04	0.02
Silicon (Si)	1.00	0.57
Sulfur (S)	0.03	0.006
Tungsten (W)	1.00	0.06

NOTE: Single values are maximums.

TYPICAL MECHANICAL PROPERTIES:

	AWS Spec (min)	As Welded
Ultimate Tensile Strength	95,000 psi (660 MPa)	124,000 psi (860 MPa)
Yield Strength	Not required	97,000 psi (670 MPa)
Percent Elongation in 2"	22%	20%

TYPICAL WELDING PARAMETERS:

Diameter	WFS (ipm)	Amperage	Volts	ESO (in.)	Deposition Rate (lbs/hr)
.045"	250	130	24	5/8-3/4"	5.4
	300	160	26	5/8-3/4"	6.3
	425	200	28	5/8-3/4"	9.2
	780	270	34	5/8-3/4"	16.2
1/16"	150	170	25	3/4-1"	5.4
	195	215	27	3/4-1"	7.0
	240	250	28	3/4-1"	8.6
	320	305	29	3/4-1"	11.5

Note: Optimum conditions are in boldface type. Parameters reflect CO₂ shielding gas - reduce by 2 volts when using 75-80% Ar/ balance CO₂. Maintaining a proper welding procedure, including pre-heat and interpass temperatures, may be critical depending on the type and thickness of material being welded.

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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.