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## ER312 DATA SHEET

### Pinnacle Alloys ER312

AWS CLASS ER312

#### CODE AND SPECIFICATION DATA:

AWS A5.9 ASME SFA 5.9; UNS S31380

#### DESCRIPTION:

Pinnacle Alloys ER312 is valuable for welding dissimilar joints, especially if one of the base metals is a stainless high in nickel content. The deposit is two-phase, high in ferrite. Even with considerable dilution with austenite forming elements, such as nickel, the microstructure is two-phase and thus highly resistant to weld metal cracks and fissures. Pinnacle Alloys ER312 is intended for welding stainless steels to mild steels and for welding high strength steels that are difficult to weld with ferritic electrodes. This wire also joins stainless steels where high strength or wear resistance is essential. Service temperatures should be below 800°F to prevent formation of secondary brittle phases.

**DIAMETERS:** .035", .045", 1/16", 3/32", 1/8", 5/32"

#### TYPICAL CHEMICAL COMPOSITION (Wt %):

Carbon (C)	0.11
Chromium (Cr)	30.0
Copper (Cu)	0.04
Iron (Fe)	Balance
Manganese (Mn)	1.80
Molybdenum (Mo)	0.03
Nickel (Ni)	8.80
Phosphorous (P)	0.017
Silicon (Si)	0.40
Sulfur (S)	0.001

#### TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)                      106,000 psi  
 Percent Elongation                            25%

#### TYPICAL GMAW PARAMETERS (Spray Transfer Welding with Bare Stainless Wire):

Diameter	Type of Power	Amperage	Volts	Stickout	98% Ar/ 2% O <sub>2</sub> (cfh)
.035"	DCEP	150-225	23-26	1/2"-3/4"	35
.045"	DCEP	200-325	24-28	1/2"-3/4"	35
1/16"	DCEP	300-350	24-27	1/2"-3/4"	35



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**TYPICAL GMAW PARAMETERS (Short-Circuiting Welding with Bare Stainless Wire):**

Diameter	Type of Power	Amperage	Volts	Stickout	90% He/ 7½% Ar/ 2½% CO <sub>2</sub> (cfh)
.035"	DCEP	60-200	14-22	3/8"-1/2"	25
.045"	DCEP	75-225	15-23	3/8"-1/2"	25
1/16"	DCEP	100-250	16-23	3/8"-1/2"	25

**TYPICAL GTAW PARAMETERS (Welding with Stainless Cut-Lengths\*):**

Diameter	Metal Thickness	Number of Passes	Tungsten Size	Amperage	Travel Speed (in/min)
1/16"	1/16"	1	1/6"	35-60	12
3/32"	3/32"	1	1/16"	45-85	12
3/32"	1/8"	1	1/16"	55-100	12
1/8"	3/16"	1	3/32"	65-130	10

\*DCEN, Argon Shield, Tungsten Electrode

**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, 550 NW LeJune Road, 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 MSDS sheet may be obtained at [www.pinnaclealloys.com](http://www.pinnaclealloys.com).