

Stainless Steel Bare Wire

Alloy: WW316
Class: ER316

Conforms to Certification: AWS A5.9
ASME SFA A5.9

Alloy ER316 Welding Data

Weld Process: Used for Mig, Tig, and Submerged Arc

AWS Chemical Composition

C = 0.08 max Si = 0.30 – 0.65
Cr = 18.0 – 20.0 P = 0.03 max
Ni = 11.0 – 14.0 S = 0.03 max
Mo = 2.0 – 3.0 Cu = 0.75 max
Mn = 1.0 – 2.5

Deposited Chemical Composition % (Typical)

C = 0.05 Mo = 2.25 P = 0.012
Cr = 19.25 Mn = 1.70 S = 0.010
Ni = 11.25 Si = 0.40

Deposited All Weld Metal Properties

Data is typical for ER316 weld metal deposited by Mig using Argon + 2% oxygen and Tig using 100% Argon as the shielding gas. Data on sub-arc is dependent on the type of flux used.

Mechanical Properties (R.T.)

Yield Strength 59,000psi
Tensile Strength 88,000psi
Elongation 40%
Reduction of Area 60%

Application

ER316 is recommended for welding AISI 316 stainless steel applications when high creep strength at elevated temperatures where resistance to pitting by corrosive liquids is needed.

Recommended Welding Parameters

GMAW “Mig Process”

Reversed Polarity

Wire Diameter	Wire Feed	Amps	Volts	Shielding Gas	Gas CFH
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Short Arc Welding

.030	13-26	40-120	16-20	Argon+2% O ₂	25
.035	13-26	60-140	16-22	Argon+2% O ₂	25

Spray Arc Welding

.035	20-39	140-220	24-29	Argon+2% O ₂	38
.045	16-30	160-260	25-30	Argon+2% O ₂	38
1/16	10-16	230-350	27-31	Argon+2% O ₂	38

GTAW “Tig Process”

Wire Diameter	Amps DCRP	Voltage	Gases
.035	60-90	12-15	Argon 100%
.045	80-110	13-16	Argon 100%
1/16	90-130	14-16	Argon 100%
3/32	120-175	15-20	Argon 100%

Note: Parameters for tig welding are dependent upon plate thickness and welding position.

Other shielding Gases may be used for Mig and Tig welding. Shielding gases are chosen taking Quality, Cost, and Operability into consideration

Submerged Arc Welding

Reverse Polarity is suggested

Wire Diameter	Amps	Volts
3/32	250-450	28-32
1/8	300-500	29-34
5/32	400-600	30-35
3/16	500-700	30-35

Both Agglomerated and fused fluxes can be used for submerged arc welding. Note: The chemical composition of the flux mainly affects the chemistry of the weld metal and consequently its corrosion resistance and Mechanical properties.

