WELDWIRE COMPANY, INC. **Technical Information**

Stainless Steel Bare Wire

Alloy: WW316L Conforms to Certification: AWS A5.9
Class: ER316L ASME SFA A5.9

Alloy ER316L Welding Data

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

AWS Chemical Composition

C = 0.03 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 = 0.015	Mo = 2.50	P = 0.010
Cr = 18.75	Mn = 1.80	S = 0.010
Ni = 12.25	Si = 0.34	

Deposited All Weld Metal Properties

Data is typical for ER316L weld metal deposited by Mig using Argon + 2% oxygen and Tig using 100% Argon as the shielding gas. Data on sub-arc is not given as they are dependent on the type of flux used.

Mechanical Properties (R.T.)

Yield Strength	59,000psi
Tensile Strength	88,000psi
Elongation	35%
Reduction of Area	39%

Application

ER316L filler metal is primarily used for welding low carbon molybdenum-bearing austenitic alloys. This low carbon alloy is not as strong at elevated temperatures as ER316H.

Recommended Welding Parameters

GMAW "Mig Process" Reversed Polarity

Wire Diameter	Wire Feed	Amps	Volts	Shielding Gas	Gas CFH
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.

If additional information is needed Contact Weldwire Company, Inc. 800-523-1266