

Stainless Steel Bare Wire

Alloy: WW320LR  
Class: ER320LR

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

Alloy ER320LR Welding Data

Weld Process: Used for Mig, Tig and Submerged Arc

AWS Chemical Composition

C = 0.025 max	Si = 0.15 max
Cr = 19.0 – 21.0	P = 0.015 max
Ni = 32.0 – 36.0	S = 0.02 max
Mo = 2.0 – 3.0	Cu = 3.0 – 4.0
Mn = 1.5 – 2.0	Nb = 8 x C (min) – 0.4 (max)

Deposited Chemical Composition % (Typical)

C = 0.015	Mo = 2.50	P = 0.007
Cr = 19.60	Mn = 1.60	S = 0.007
Ni = 34.10	Si = 0.05	Cu = 3.40
Nb = 0.25		

Recommended Welding Parameters

GMAW “Mig Process”

Reversed Polarity

Wire Diameter	Wire Feed	Amps	Volts	Shielding Gas	Gas CFH
<u>Short Arc Welding</u>					
.030	13-26	40-120	16-20	Argon+2% O <sub>2</sub>	25
.035	13-26	60-140	16-22	Argon+2% O <sub>2</sub>	25

Spray Arc Welding

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

Deposited All Weld Metal Properties

Data is typical for ER320LR 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.

Tensile Strength	86,000psi
Yield Strength	57,500psi
Elongation	35%

Application

ER320LR has a composition similar to ER320, except that carbon, silicon, phosphorus, and sulfur levels are kept at a lower level. The low melting residuals are limited in this alloy to reduce micro fissuring. This alloy is often used for welding type ER320 stainless steels.

