



# PRODUCT

## DATA SHEET

### Stainless Steel Bare Wire

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

Alloy: 312 Class: ER312

Conforms to Certification: AWS A5.9 / ASME SFA 5.9

Alloy: DM312



# PRODUCT

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### AWS Chemical Composition

C = 0.15 max      Si = 0.30 – 0.65  
 Cr = 28.0 – 32.0      P = 0.03 max  
 Ni = 8.0 – 10.5      S = 0.03 max  
 Mo = 0.75 max      Cu = 0.75 max  
 Mn = 1.0 – 2.5

### Deposited Chemical Composition % (Typical)

C = 0.11      Mo = 0.15      P = 0.013  
 Cr = 29.00      Mn = 1.60      S = 0.013  
 Ni = 9.25      Si = 0.40

### Deposited All Weld Metal Properties

Data is typical for ER312 weld metal deposited by Mig using Argon + 2% oxygen, and tig using Argon as the shielding gas. Data on sub-arc is dependent on the type of flux used.

### Mechanical Properties (R.T.)

Yield Strength      75,000psi  
 Tensile Strength      105,000psi  
 Elongation      25%  
 Reduction of Area      30%

### Application

ER312 is used to weld cast alloys of similar composition and is used to weld dissimilar metals and weld overlays. This alloy has very high ferrite. When welding similar cast alloys, limit welding to two or three layers only.

### 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 <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 DCEN	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.