



PRODUCT

DATA SHEET

Stainless Steel Bare Wire

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

Alloy: 309 Class: ER309

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

Alloy: DM309



PRODUCT

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AWS Chemical Composition Requirements

C = 0.12 max	P = 0.03 max
Cr = 23.0 – 25.0	S = 0.03 max
Ni = 12.0 – 14.0	Mo = 0.75 max
Mn = 1.0 – 2.5	Cu = 0.75 max
Si = 0.30 – 0.65	

Deposited Chemical Composition % (Typical)

C = 0.06	P = 0.018
Cr = 23.5	S = 0.015
Si = 0.4	Ni = 13.00
Mn = 1.8	Mo = 0.25
Cu = 0.20	

Deposited All Weld Metal Properties

Data is typical for ER309 weld metal deposited by Mig using Argon + 2% oxygen and Tig using 100% Argon as the shielding gas. Data on sub-arc is not presented, as sub-arc is dependent on the type of flux used.

Mechanical Properties (R.T.)

Yield Strength	57,000psi
Tensile Strength	86,000psi
Elongation	47%
Reduction of Area	68%

Application

ER309 is used for the welding of similar alloys in wrought or cast form. It is mostly used for welding dissimilar materials such as mild steel to stainless steel, as well as for a barrier layer in stainless overlays. For some applications, welding of straight chromium steels can be accomplished with this consumable.

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 DCEN	Voltage	Gases
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.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.