

Stainless Steel Bare Wire

Alloy: WW420
Class: ER420

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

Alloy ER420 Welding Data

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

AWS Chemical Composition

C = 0.25 – 0.40 Si = 0.50 max
Cr = 12.0 – 14.0 P = 0.03 max
Ni = 0.60 max S = 0.03 max
Mo = 0.75 max Cu = 0.75 max
Mn = 0.60 max

Deposited Chemical Composition % (Typical)

C = 0.29 Mo = 0.10 P = 0.014
Cr = 13.5 Mn = 0.45 S = 0.008
Ni = 25 Si = 0.48

Deposited All Weld Metal Properties

Data is typical for ER420 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.

Note: Mechanical properties are greatly influenced by changes in welding parameters such as preheat and inter-pass temperatures.

Mechanical Properties (R.T.)

Yield Strength 120,00psi
Tensile Strength 145,000psi
Elongation 45%

Application

This alloy is often used for surfacing applications which call for superior resistance to abrasion. It requires preheat and inter-pass temperatures of not less than 400°F, followed by slow cooling. Post weld heat treatment is used to temper the weld deposit.

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 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.

