

Nickel Alloy Wire

Alloy: WWNA61
Class: ERNi-1

Conforms to Certification: AWS A5.14
ASME SFA A5.14

Alloy: ERNi-1 (Alloy 61)
Weld Process: GMAW, GTAW and ASAW Welding Processes

AWS Chemical Composition Requirements

C = 0.15 max Cu = 0.25 max
Mn = 1.0 max Ni = 93.0 min
Fe = 1.0 max Al = 1.50 max
P = 0.03 max Ti = 2.0 – 3.5
S = 0.015 max Other = 0.50 max
Si = 0.75 max

Deposited All Weld Metal Properties % (AW)

Tensile Strength 66,000psi
Yield Strength 38,000psi
Elongation 28%

Deposited Chemical Composition % (Typical)

C = 0.06 P = 0.008 Ni = Balance
Mn = 0.30 S = 0.003 Ti = 3.0
Fe = 0.10 Si = 0.40 Al = 0.50
Cu = 0.02

Deposited Charpy-V-Notch Impact Properties %

Not applicable

Application

ERNi-1 (NA61) is used for GMAW, GTAW and ASAW welding of Nickel 200 and 201, joining these alloys to stainless and carbon steels, and other nickel and copper-nickel base metals. Also used for overlaying steel.

Recommended Welding Parameters for TIG, MIG, and SAW Welding of Nickel Alloys

<u>Process</u>	<u>Diameter of Wire</u>	<u>Voltage (V)</u>	<u>Amperage (A)</u>	<u>Gas</u>
Tig	.035 inches x 36	12 -15	60 -90	100% Argon
	.045 inches x 36	13 -16	80 - 110	100% Argon
	1/16 inches x 36	14 - 18	90 - 130	100% Argon
	3/32 inches x 36	15 – 20	120 -175	100% Argon
	1/8 inches x 36	15 – 20	150 - 220	100% Argon
MIG	.035 inches	26 – 29	150 – 190	75% Argon + 25% Helium
	.045 inches	28 – 32	180 – 220	75% Argon + 25% Helium
	1/16 inches	29 – 33	200 - 250	75% Argon + 25% Helium
SAW	3/32 inches	28 – 30	275 – 350	Suitable Flux may be used
	1/8 inches	29 – 32	350 – 450	Suitable Flux may be used
	5/32 inches	30 – 33	400 – 550	Suitable Flux may be used

Note: Other shielding Gases may be used for Mig and Tig welding. Shielding gases are chosen taking Quality, cost, and Operability into consideration.

Note: 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.

