

Nickel Alloy Wire

Weld Process: GMAW, GTAW and SAW

Alloy: *ERNi-1 (Alloy 61)*

Class: *ERNi-1*

Conforms to Certification: *AWS A5.14 ASME SFA 5.14*

Alloy: *DMNA061*

Application

ERNi-1 (NA61) is used for GMAW, GTAW and SAW 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.

AWS Chemical Composition Requirements

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

Deposited Chemical Composition % (Typical)

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

Deposited All Weld Metal Properties % (AW)

Tensile Strength	Yield Strength	Elongation	Charpy-V-Notch Impact Properties
66,000psi	38,000psi	28%	Not applicable

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

Process	Diameter of Wire	Voltage (V)	Amperage (A)	Gas
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

Notes

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.