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ERNICRCOMO-1

Alloy: ERNiCrCoMo-1 (Alloy 617)
Weld Process: GMAW, GTAW Welding Processes

AWS Chemical Composition Requirements	
Element	**Composition (%)**
C (Carbon)	0.05 – 0.15
Mn (Manganese)	1.0 max
P (Phosphorus)	0.03 max
S (Sulfur)	0.015 max
Si (Silicon)	1.0 max
Cu (Copper)	0.50 max
Ni (Nickel)	Remainder
Fe (Iron)	3.0 max
Co (Cobalt)	10.0 – 15.0
Al (Aluminum)	0.8 – 1.5
Ti (Titanium)	0.60 max
Cr (Chromium)	20.0 – 24.0
Mo (Molybdenum)	8.0 – 10.0
Other	0.50 max

Deposited Chemical Composition % (Typical)	
Element	**Composition (%)**
C (Carbon)	0.06
Mn (Manganese)	0.2
P (Phosphorus)	0.005
S (Sulfur)	0.001
Fe (Iron)	0.75
Ni (Nickel)	Balance
Cr (Chromium)	21.8
Co (Cobalt)	12.45
Al (Aluminum)	1.25
Mo (Molybdenum)	9.05

Application

ERNiCrCoMo-1 welds nickel-chromium-cobalt-molybdenum alloys, cast heat-resistant alloys, and dissimilar metals for high-temperature service up to 2100°F.

Deposited All Weld Metal Properties % (AW)	
Property	**Value**
Tensile Strength	112,000 psi
Yield Strength	88,500 psi
Elongation	28%

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Welding Parameters for TIG and MIG Welding of Nickel Alloys				
Process	**Diameter of Wire**	**Voltage (V)**	**Amperage (A)**	**Gas Composition**
TIG	.035 inches x 36	Dec-15	60 - 90	100% Argon
TIG	.045 inches x 36	13 - 16	80 - 110	100% Argon
TIG	1/16 inches x 36	14 - 18	90 - 130	100% Argon
TIG	3/32 inches x 36	15 - 20	120 - 175	100% Argon
TIG	1/8 inches x 36	15 - 20	150 - 220	100% Argon
MIG	.035 inches	26 - 29	150 - 190	75% Argon + 25% Helium
MIG	.045 inches	28 - 32	180 - 220	75% Argon + 25% Helium
MIG	1/16 inches	29 - 33	200 - 250	75% Argon + 25% Helium

Note

Other shielding gases can be used for MIG and TIG welding, considering quality, cost, and operability.