

Stainless Steel Welding Wire



GJ-ER309L

Copper-Free Solid Wire

(22Cr-12Ni ultra-low carbon, dissimilar metal)

- ▶ AWS A5.9 ER309L
- ▶ EN ISO 14343-A-G 23 12 L

Product description

GJ-ER309L is a 23% chromium - 13% nickel ultra-low carbon austenitic stainless steel solid wire strictly complying with AWS A5.9 ER309L. The higher alloy content provides sufficient dilution tolerance, making it the standard choice for welding stainless to carbon steel and for dissimilar metal joints.

Key Advantages

- ▶ Dissimilar Metal Capability: 23Cr-13Ni composition tolerates dilution from carbon steel, maintaining austenitic structure in mixed joints.
- ▶ Excellent Crack Resistance: Produces 8-12 FN weld metal with good resistance to hot cracking in highly restrained dissimilar joints.
- ▶ Versatile Buffer Layer: Ideal as a buffer layer for surfacing carbon steel with stainless steel overlays and for cladding applications.

Application Guide

- ▶ With Ar+2%O₂ shielding: For welding 304 stainless to carbon steel, low-alloy steel, and for dissimilar metal joints in pressure vessels.
- ▶ With 98%Ar+2%CO₂: For welding 309/309L base metal, and for buttering/cladding layers on carbon steel prior to stainless overlay.
- ▶ For repair welding: Suitable for repair of cast stainless steels and for welding stainless steel liners to carbon steel shells.

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● Main constituents

Elements	C (Carbon)	Si (Silicon)	Mn (Manganese)	Cr (Chromium)	Ni (Nickel)	Mo (Molybdenum)	S (Sulfur)	P (Phosphorus)
AWS Requirement	≤0.03	0.30 - 0.65	1.0 - 2.5	23.0 - 25.0	12.0 - 14.0	≤0.75	≤0.030	≤0.030
Typical Actual Value	0.02	0.45	1.70	24.0	13.0	0.20	0.008	0.015

● Typical Mechanical Properties of Deposited Metal

Mechanical properties tested as all-weld metal with Ar+2%O₂ shielding gas (DC+). AWS A5.9 does not specify minimum mechanical properties for austenitic stainless wires; values shown are industry typical results.

Test Item	Yield Strength	Tensile Strength	Elongation	Ferrite Number
AWS A5.9 Requirement	—	—	—	8 - 12 FN
Typical Actual Result	400 MPa	600 MPa	35%	10 FN

● Reference Welding Parameters

Wire Diameter	0.8 mm (0.030")	1.0 mm (0.040")	1.2 mm (0.045")	1.6 mm (1/16")
Amperage	60 - 150	80 - 200	100 - 280	140 - 350
Voltage	18 - 22	20 - 26	22 - 30	24 - 34