

MG-309/309L (MIG)

CONFORMANCES:

AWS A5.9/A5.9M : ER309/309L

ASME SFA-A5.9 : ER309/309L

Characteristics and Applications:

MG-309/309L is a low-carbon austenitic stainless steel. The low carbon content helps reduce carbide precipitation at the grain boundaries, which prevents intergranular corrosion. It contains a small amount of ferrite structure, giving it excellent crack resistance. The arc is soft, spatter is low, and the weld beads look beautiful. It performs well in all welding positions. It is used for manufacturing equipment in the synthetic fibre and petrochemical industries, and for welding dissimilar steel structures.

Precautions:

- Polarity: Use DC+ (Direct Current Electrode Positive).**
- Shielding Gas: It is recommended to use 98% Argon + 2% Oxygen. The Argon purity should be above 99.997%.**
- Gas Flow: Control the shielding gas flow properly, approximately 20–25 L/min.**
- Stick-out Length: The wire extension length should be adjusted based on the welding current, typically between 15–25 mm.**
- Wind Protection: Proper wind protection is required during welding. Otherwise, the shielding gas can be affected by the wind, leading to poor shielding, weld degradation, and porosity.**
- Equipment Check: Deficiencies or malfunctions in the welding gun tip, welding machine, wire feeder, gas regulator, or heater will negatively affect the welding quality. Always inspect and adjust these items before use.**
- Clean Surface: Rust, oil, and dust on the surface of the base material must be thoroughly removed.**

AWS CHEMICAL COMPOSITION (TYPICAL)

	%C	%Mn	%Si	%P	%S	%Ni	%Cr	%Mo	%Cu
AWS A5.9 ER309	≤0.12 max.	1.0-2.5	0.30-0.65	≤0.03 max.	≤0.03 max.	12.0-14.0	23.0-25.0	≤0.75 max	≤0.75 max
AWS A5.9 ER309L	≤0.03 max.	1.0-2.5	0.30-0.65	≤0.03 max.	≤0.03 max.	12.0-14.0	23.0-25.0	≤0.75 max	≤0.75 max
Example value	0.012	1.58	0.48	0.02	0.003	13.6	23.2	0.10	0.11

TYPICAL WELD METAL MECHANICAL PROPERTIES (TYPICAL)

	Yield Strength MPa(Psi)	Tensile Strength MPa(Psi)	Elongation %	Impact value J (ft-lbf) -196°C(-320°F)
98% Ar+2%O2	435 (63,000)	584 (85,000)	35	85 (62.5)
AWS	-	-	-	-

WELDING PARAMETERS (TYPICAL) : DCEN (DC-)

Wire Diameter (mm)		1.2	
Welding Position		Flat	Horizontal
Current / Voltage		130-225/23-28	75-225/15-23
Stick-out Length (mm)		13-19	10-13
Spray Transfer	98% Ar + 2% O2 Flow Rate (l/min)	16.5	-
Short-Circuit	90% He - 7-1/2% Ar - 2-1/2% CO2 (l/min)	-	11.8

WIRE DIAMETER :

Diameter (Inch)	0.030" / 0.035" / 0.040" / 0.045" / 0.062"	Diameter (mm)	0.8 / 0.9 / 1.0 / 1.2 / 1.6
Weight (kg)	15 (Spool), 125 (Drum), 250 (Drum)		

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