

GA-316/316L (TIG)

CONFORMANCES:

AWS A5.9/A5.9M: ER316/316L

ASME SFA-A5.9: ER316/316L

Characteristics and Applications:

The nominal composition (wt.%) of GA-316/316L is 19% Cr, 12.5% Ni, and 2% Mo, which is a stabilized austenitic structure. It offers excellent workability and weldability. Because it contains Molybdenum (Mo), it has superior corrosion resistance against acetic acid, sulfurous acid, phosphoric acid, and various salts, as well as high resistance to high-temperature cracking. It is suitable for use in the chemical industry, power engineering components, and LNG storage tanks, such as for materials like AISI 316/316L and SUS 316/316L. It is suitable for base materials including stainless steel sheets, strips, pipes, seamless pipes, heat exchanger tubes, pressure vessel plates, steel bars, and castings.

Precautions:

- Shielding Gas:** Use Argon gas with a purity of 99.997% or higher. Adjust the gas flow based on the welding current.
- Wind Protection:** Set up a windbreak. If the wind blows the gas away, the weld will be weak and may have small holes (porosity).
- Welding Setup:** Choose the right size for the ceramic gas nozzle and keep the tungsten electrode at the correct length.
- Cleaning:** Clean all rust, oil, and dust off the metal surface before you start welding.

AWS CHEMICAL COMPOSITION (TYPICAL)

	%C	%Mn	%Si	%P	%S	%Ni	%Cr	%Mo	%Cu
AWS A5.9 ER316/ 316L	≤0.03 max.	1.0-2.5	0.30-0.65	≤0.03 max.	≤0.03 max.	11.0-14.0	18.0-20.0	2.0-3.0	≤0.75 max
	0.02	1.62	0.50	0.018	0.008	12.09	19.10	2.5	0.30

TYPICAL WELD METAL MECHANICAL PROPERTIES (TYPICAL)

	Yield Strength MPa(Psi)	Tensile Strength MPa(Psi)	Elongation %	Impact value J (ft-lbf) -196°C(-320°F)
100%Ar	440 (64,000)	590 (86,000)	39	100 (74)
AWS	-	-	-	-

WELDING PARAMETERS (TYPICAL) : DCEN (DC-)

Wire Diameter Inch(mm)	Patent Thickness Inch(mm)	Number of Passes	Steel Rod Inch(mm)	Amperage	Welding Transfer Speed (mm/s)
1/16" (1.6 mm)	1/16" (1.6 mm)	1	1/16" (1.6 mm)	140-160	5.1
3/32" (2.4 mm)	3/32" (2.4 mm)	1	1/16" (1.6 mm)	180-200	5.1
3/32" (2.4 mm)	1/8"(3.2 mm)	1	1/16" (1.6 mm)	180-200	5.1
1/8"(3.2 mm)	3/16"(4.8 mm)	1	3/32" (2.4 mm)	210-230	4.2

DIAMETER :

TIG Rod (Inch)	1/16" / .079" / 3/32" / 1/8"	TIG Rod (mm)	1.6 / 2.0 / 2.4 / 3.2
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