

Titanium Welding Parameters

Typical Welding Parameters for Titanium Manual GTA Welding						
Diameter of Wire		Amperage (A)	Voltage (V)	Travel Speed (in./min.)	Deposition Rate (lb./h)	Shielding Gas
Inches	Millimeters					
1/16"	1.6	180	16	5 to 15	0.50 to 0.70	100% Argon
3/32"	2.4	190	17	5 to 15	0.80 to .90	100% Argon
1/8"	3.2	205	19	5 to 15	1.20 to 1.36	100% Argon

TITANIUM WELDING INFORMATION

Welding with titanium requires extreme cleanliness. Grind or file off mill scale. Clean surface oxides with a 35% nitric – 5 % hydrofluoric acid solution at room temperature, then rinse with water and air dry. Grease or oils should be cleaned with a nonchlorinated degreasing solvent, acetone or methanol. Light Oil can be washed away with a normal household detergent, then air-dried.

Titanium is a reactive metal and as such it is sensitive to embrittlement by oxygen, nitrogen, and hydrogen, within the weld zone area, at temperatures above 500°F. Consequently the weld metal must be protected against atmospheric contamination that may be caused by these elements. This can be most easily attained by holding the shielding gas over the weld area until it cools to approximately 600°F.

Argon is the recommended shielding gas, however an argon-helium mixture will give greater penetration although at the expense of arc stability.