

Royal ER Ti-1 / ER Ti-2

Gas Tungsten Arc Welding
(GTAW) TIG Wire

Titanium Alloys



"The Royal Line"

CROWN ALLOYS COMPANY

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Premium Titanium TIG Alloys

Typical Applications

The **Royal ER Ti-1** and **Royal ER Ti-2** can be used to successfully weld most grades of titanium. These are the most common unalloyed (or Commercially Pure-CP) grades of titanium, although **Royal ER Ti-2** is the most popular due to its good balance of strength, ductility and weldability.

Specifications

AWS A5.16/A5.16M:2007

Typical Mechanical Properties			
Titanium Alloy	Tensile Strength (psi)	Yield Strength (psi)	Elongation (% in 2")
Royal ER Ti-1	35,000	25,000	24
Royal ER Ti-2	50,000	40,000	20

Procedure

It is very important that titanium is clean and free of grease in order to obtain a good weld. To prevent the body's natural oils from contaminating the filler rod or base metal, always wear nitrile gloves when handling titanium. A caustic wash with water rinse, acetone or methyl ethyl ketone (MEK) wash may be used. Avoid using chlorinated solvents. When welding, care must be taken to prevent atmospheric contamination. Use a larger nozzle on the TIG torch and higher flow rate of shielding gas than is normally used with other metals. It is important to use a trailing shield and in some instances a backing shield to protect the weld root. Very critical applications will require a purge chamber to absolutely prevent atmospheric contamination. Be sure to keep the end of the filler metal inside the shielding gas coverage at all times while welding. Use a post or secondary flow of shielding gas until the solidified, cooling weld bead and the heat-affected zone (HAZ) cools to below 800°F. High-purity argon is the recommended shielding gas.

The weld should be bright and shiny. If the weld is pale yellow or golden, it can be cleaned up with a stainless brush. Blue or purple welds are susceptible to cracking; gray or yellow powdery looking welds have to be cut out and rewelded correctly.

GTAW (TIG) Welding Parameters

Manual Welding – Direct Current Electrode Negative(DCEN) – Use a 2%-ceriated tungsten						
Wire Diameter	Shielding Gas	Welding Current (amps)	Arc Voltage (volts)	Travel Speed (ipm)	Torch Gas Flow (cfh)	Trailing Gas Flow (cfh)
1/16	100% High-Purity Argon	100 – 150	14 – 16	4 – 8	15	40
3/32		125 – 175	13 – 15	4 – 8	15	40
1/8		150 – 175	13 – 15	4 – 8	15	40

Sizes and Part Numbers

Product	Size	Part Numbers	
		1# Package	5# Package
Royal ER Ti-1	1/16 x 36"	RTT1/TL-BP	RTT1/TL
	3/32 x 36"	RTT1/TN-BP	RTT1/TN
	1/8 x 36"	RTT1/TO-BP	RTT1/TO
Royal ER Ti-2	1/16 x 36"	RTT2/TL-BP	RTT2/TL
	3/32 x 36"	RTT2/TN-BP	RTT2/TN
	1/8 x 36"	RTT2/TO-BP	RTT2/TO



!!!! WARNING !!!!



WELDING FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH.

BEFORE USING THIS PRODUCT THE WELDER (END-USER) MUST READ AND UNDERSTAND THE COMPLETE PRODUCT WARNING LABEL AND THE NEW 16 SECTION SAFETY DATA SHEET (SDS).

THE SAFETY DATA SHEET (SDS) WHICH OUTLINES THE POTENTIAL HEALTH HAZARDS AND SAFETY INFORMATION RELATED TO THIS PRODUCT CAN BE DOWNLOADED FROM THE SDS PORTION OF THIS WEBSITE. IT IS ALSO AVAILABLE FROM YOUR EMPLOYER AND WELDING SUPPLY DISTRIBUTOR.

DO NOT PROCEED WITH USE OF THIS PRODUCT UNTIL YOU READ AND UNDERSTAND THE SAFETY DATA SHEET (SDS) AND PRODUCT WARNING STATEMENT.

BE SURE TO CONSULT THE LATEST VERSION OF THE SDS.

SEE THE PRODUCT WARNING LABEL AND SDS FOR COMPLETE WARNING INFORMATION.

