DAIKOWT Ti 2

GTAW

TITANIUM ALLOYS
Gr. 2

DESCRIPTION

Titanium Alloy Rod gr. 2

Universal rod for welding titanium grades 1, 2, 3, and 4, known as commercially pure titanium. The impurity content and mechanical properties are slightly higher compared to other grades (ERTi-1 to ERTi-4). It is the most commonly used titanium rod in the industry for its excellent balance between strength, formability, and weldability. It is widely used in seawater heat exchangers, chemical plants, pressure vessels, piping systems, pulp bleaching systems, purifiers, and the aerospace industry.

SPECIFICATIONS

AWS A5.16	ERTi-2	**Shielding**	I1
Positions	PA, PB, PC, PD, PE, PF	**Current**	DC-
Packaging Type	5kg carton tube		

ASME QUALIFICATIONS

F-No (QW432)	51
A-No (QW442)	-

CHEM. COMP. %	DEFAULT
C	0.02
N	0.01
P	0.007
Fe	0.1

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	-	460
Yield strength $R_{p0.2}$ MPa	0	390
Elongation A (L_0=5d_0) %	0	20
Impact Charpy ISO-V	-	-
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	1.6 mm	3.2 mm
Ampere	190A - 250A	220A - 280A
Voltage	-	-
Packaging	Ø 1,0÷2,4 mm	Ø 1,0÷2,4 mm
Packaging Type	5kg carton tube	5kg carton tube

DAIKO

Gr. 2

DESCRIPTION

APPLICATION

This filler material is intended for GTAW and GMAW welding of commercially pure titanium alloys, often used in contexts requiring high performance resistance to high temperatures and chemical reagents. Among the four available grades of pure titanium filler metals, C.P. grade 2 (ERTi-2) is notable for its widespread use, excellently balancing mechanical strength, formability, and weldability. The aerospace industry represents the main field of application, favoring it for its tensile strength and excellent weight-strength ratio. Additional uses include cryogenic and petrochemical fields, where it is employed in heat exchangers for chemical processes, pressure vessels, piping systems, pulp bleaching equipment, and electrochemical and chemical storage tanks. Compared to other types of commercially pure titanium, this grade is slightly less strong than grade 3 but more robust than grade 1, ensuring excellent corrosion resistance. Grade 2 offers a formidable balance between moderate mechanical strength and adequate ductility, and it is also non-magnetic.

ALLOY TYPE

Gr. 2 titanium, commercially pure.

MICROSTRUCTURE

Pure alpha alloys (compact hexagonal lattice-HCP).

MATERIALS

Suitable for welding Titanium grade 1, 2, 3 and 4.
EN W.Nr.: 3.7025, 3.7035, 3.7055, 3.7065
ASTM: Ti-Gr 1, Ti-Gr 2, Ti-Gr 3, Ti-Gr 4
UNS: R504007, R50400, R50550, R50700

WELDING & PWHT

Titanium, being a reactive metal, is sensitive to embrittlement induced by oxygen, nitrogen, and hydrogen at high temperatures. Therefore, it is essential to protect it from atmospheric contamination by shielding it with inert gases during welding. In the arc welding process, it is crucial to keep titanium protected from the surrounding atmosphere until it cools below about 430°C. Before welding, the metal must be entirely oxide-free and chemically clean, as contaminants like oxides, water, grease, or dirt can lead to embrittlement. Consequently, titanium welding rods must be chemically cleaned and free from heavy oxides, absorbed moisture, grease, and dirt. Cleaning between passes is not necessary if the weld bead maintains a shiny, silver-like appearance. A shift in the weld color towards yellow or blue can be eliminated with a clean stainless steel wire brush. Contaminated weld beads, indicated by a dull dark blue, gray, or white color, must be entirely removed by grinding. The joint must be carefully prepared and cleaned before rewelding.