DAIKOWM Ti 5

GMAW

TITANIUM ALLOYS
Gr. 5

DESCRIPTION

Titanium alloy solid wire gr 5

This Titanium is commonly referred to as "6-4" titanium and shows excellent weldability. it can be heat treated to a higher strength or toughness. Grade 5 is used in aircraft components such as landing gear, wing spars, and compressor blades. Its corrosion resistance is generally comparable to Grade 2 and it is often used in corrosion service where higher strength is required, particularly in shafts, high strength bolting, and keys. The weld deposit is ductile and offers excellent corrosion resistance in oxidizing environments.

SPECIFICATIONS

AWS A5.16	ERTi-5	**Shielding**	I1, I3
Positions	PA, PB, PC, PD, PE, PF	**Current**	DC+
Packaging Type	Drums, B300, D200 and D100 spools.		

ASME QUALIFICATIONS

F-No (QW432)	55
A-No (QW442)	-

CHEM. COMP. %	DEFAULT
C	0.01
N	0.006
Al	6
V	4
P	0.004
Fe	0.1

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	-	1000
Yield strength $R_{p0.2}$ MPa	0	900
Elongation A (L_0=5d_0) %	0	8
Impact Charpy ISO-V	-	-
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	1.0 mm	1.2 mm
Ampere	160A - 280A	240A - 300A
Voltage	18V - 27V	31V - 35V
Packaging	Ø 0,8÷1,6mm	Ø 0,8÷1,6mm
Packaging Type	Drums, B300, D200 and D100 spools.	Drums, B300, D200 and D100 spools.

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Gr. 5

DESCRIPTION

APPLICATION

The DAIKO Ti 5 is a grade 5 titanium (Ti 6Al-4V), commonly referred to as "6-4." It is the most widely used titanium alloy globally due to its fracture strength, which is at least 895 MPa. It is valued for its good weldability and the ability to be heat-treated to improve its strength or toughness. It is used in aeronautical components such as landing gears, wing spars, and compressor blades. Its corrosion resistance is similar to that of grade 2, making it ideal for applications requiring corrosion resistance, such as shafts, high-strength fasteners, and keys. This alloy stands out for its good hot formability and weldability, in addition to being resistant to salt water, the marine atmosphere, and various temperatures of corrosive media below 300°C.

ALLOY TYPE

Gr. 5 titanium.

MICROSTRUCTURE

Alpha (compact hexagonal lattice-HCP) and Beta alloys (body centered cubic lattice-BCC) .

MATERIALS

Grade 5, Ti-6Al-4V.
EN W.Nr.: 3.7165
ASTM: Ti-Gr 5

WELDING & PWHT

Titanium is a reactive metal and sensitive to embrittlement caused by oxygen, nitrogen, and hydrogen at high temperatures. For this reason, it is essential to protect it from atmospheric contamination using inert gases during welding. During arc welding, titanium must be shielded from the surrounding atmosphere until it cools below 430°C. It is crucial that the titanium metal is free of thick oxide and is chemically clean before welding, as contamination from oxide, water, grease, or dirt can lead to embrittlement. Titanium welding rods must also be chemically clean and free from heavy oxide, absorbed moisture, grease, and dirt. Cleaning between passes is unnecessary if the weld bead remains shiny and silvery. Discoloration towards yellowish or bluish hues can be removed with a clean stainless steel wire brush. Contaminated weld beads, indicated by a dull blue, gray or white color, must be completely eliminated through grinding. Thereafter, the joint must be thoroughly prepared and cleaned before rewelding.

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