DAIKOWM Ti 12

GMAW

TITANIUM ALLOYS
Gr. 12

DESCRIPTION

Titanium alloy solid wire gr 12

Consumable with excellent corrosion resistance and good mechanical characteristics thanks to small additions of nickel and molybdenum. Mainly used in the chemical sector for pressure vessels and pipes. It has excellent weldability combined with high resistance to high temperatures and corrosion in oxidizing environments. This alloy is typically used in applications of chemical processing, heat exchangers, valves, pumps and steel and chemical industries.

SPECIFICATIONS

AWS A5.16	ERTi-12	**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)	54
A-No (QW442)	-

CHEM. COMP. %	DEFAULT
C	0.08
Ni	0.7
N	0.01
P	0.006
Mo	0.3
Fe	0.1

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	-	490
Yield strength $R_{p0.2}$ MPa	0	350
Elongation A (L_0=5d_0) %	0	25
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.

Gr. 12

DESCRIPTION

APPLICATION

These consumables offer exceptional metal-to-metal wear resistance, combined with remarkable resistance to corrosion, erosion, and thermal shocks. They are designed to operate effectively at service temperatures up to 800°C. The chromium, nickel, and molybdenum alloy-based composition ensures excellent mechanical properties, enhancing both corrosion and wear resistance. The resulting weld deposit exhibits high creep resistance, ideal for high-temperature environments. The presence of ferrite in the joint makes this consumable particularly suitable for applications such as heavy structural construction, oil rigs, boilers, pressure vessels, and cryogenic storage tanks. Additionally, it offers superior low-temperature impact values compared to other similar consumables. It is commonly used for repairing valves and valve seats in the oil and gas industry, as well as in conveyors and augers for rubber and plastic, saw teeth for the wood industry, cams, shafts, tappets, and pushrods for engines, etc.

ALLOY TYPE

Gr. 12 titanium.

MICROSTRUCTURE

Single-phase and near single-phase alpha alloys (compact hexagonal lattice-HCP).

MATERIALS

Grade 12, Ti-0.3Mo-0.8Ni.

WELDING & PWHT

Before welding, thoroughly clean the joint surface and the adjacent area, removing grease, oil, marker marks, sulfur compounds, and other contaminants. Avoid contact with copper or copper-containing materials in the joint area. Although not essential, it is preferable for the alloy to be in the solution annealed condition during welding. Generally, preheating is not necessary provided the base metal to be welded is above 0°C. Interpass temperatures should be kept low.