



COPPER TITANIUM ALLOY

NON-SPARKING AND NON-MAGNETIC HAND TOOLS



Beryllium Free



Non-Sparking



High Strength



Non Magnetic



Good Conductivity



Corrosion Resistant

Copper Titanium (QTi®) range of non-sparking, non-magnetic safety hand tools are recommended for use in all potentially explosive environments, all areas where inflammable or easily ignitable vapours, liquids and dusts are present and anywhere that a potential fire and explosion risk from sparks is possible. QTi® Non-Sparking, non-magnetic tools are as strong as Copper Beryllium Tools and far superior to Aluminium Bronze Tools. QTi® Non-Sparking Hand Tools comply to IS: 4595-1969 (Re-affirmed 2006) safety standards for Non-sparking Characteristics. QTi® Non-Sparking tools have passed the strength and performance requirements under IS:6131-1980 for Steel Tools.

Property	QTi® (Copper Titanium) Hand Tools	Copper Beryllium Hand Tools	Aluminium Bronze Hand Tools
Yield Strength, MPa	880-1150	860-1130	285-350
Tensile Strength, MPa	1000-1250	900-1200	600-750
Elongation, %	1-2	1-4	10%
Hardness, HV	240-400	260-385	190-230
Elec. Conductivity %IACS	17-25	17-23	13
Magnetic	Non-Magnetic	Non-Magnetic	Magnetic

Comparison of Copper Titanium with Copper Beryllium and Aluminium Bronze

Characteristics	QTi® (Copper Titanium) Hand Tools	Copper Beryllium Hand Tools	Aluminium Bronze Hand Tools
Strength	High	High	Low
Health Hazard	No Risk. Safe	High Risk. Unsafe	Low Risk
Durability	High	High	Very Low
Non-Magnetic	Yes	Yes	No
ATEX Zone 0 Compliance	Yes	Yes	No
Made in India	Yes	No	No
Cost	Moderate	High	Low

Technology



Copper Titanium alloy technology was developed by India's premier defence research lab DMRL of DRDO (Defence Research and Development Organization) after years of extensive research to replace hazardous and expensive Copper Beryllium alloys. This technology is transferred to Pahwa MetalTech Pvt. Ltd. on global exclusive basis which makes us the only company in the world to manufacture alloys and their tools.



TESTED and CERTIFIED for Non-Sparking Characteristics by Central Institute of Mining and Fuel Research (CIMFR)



BREAKTHROUGH INNOVATION IN THE FIELD OF MATERIALS

WARNING !

INHALING BERYLLIUM
DUST OR FUMES
MAY CAUSE SERIOUS,
CHRONIC LUNG DISEASE
AMONG EXPOSED
WORKERS.
THIS LUNG DISEASE
CAN BE FATAL.

DISADVANTAGES : Copper Beryllium (Cu-Be)

- Copper Beryllium is highly hazardous because of its beryllium content.
- Its causes Chronic Beryllium Disease (CBD) which primarily affects the lungs and can be fatal.
- CBD occur among people who are exposed to the dust or fumes from **beryllium metal, metal oxides, alloys, ceramics or salts.**
- CBD usually has a very slow onset, and **even very small amounts of exposure** to beryllium **can cause the disease.**
- Some latest research suggests that **skin can be a route of exposure and sensitization in chronic beryllium disease.**
- **Corroded Copper Beryllium** could be as much as **135 times more toxic and harmful** than Non-Corroded Copper Beryllium.
- High Cost of compliance to safety standards.
- OSHA is further lowering the acceptable standards for Permissible exposure to beryllium from $2\mu\text{g}/\text{m}^3$ to $0.2\mu\text{g}/\text{m}^3$ - **Reduction by 90%**

DISADVANTAGES : Aluminium Bronze (Al-Br)

- Aluminium- Bronze tools are poor alternative to Copper Beryllium tools.
- Aluminium Bronze is a soft material and therefore have very poor strength, it breaks under normal working conditions.
- Breakage of tool while working and can cause injury to operator.
- It contains about 5% Iron (Fe) and therefore cannot be used in application where non-magnetisim is important.
- Cannot be used in ATEX Zone 0.

ABOUT US

Pahwa MetalTech Private Limited was incorporated in 2014 by experienced techno-managerial entrepreneurs with over 40+ years of experience in the engineering and manufacturing technology with a vision to become specialized materials manufacturing company.

It has signed an agreement with DRDO for transfer of technology to manufacture of Copper Titanium alloy and its products to replace expensive and hazardous Copper Beryllium alloys for all its applications.

It has setup a modern and fully equipped manufacturing plant at chakan, Pune and has also invested in the R&D setup to continuously develop and innovate new alloys and materials.

OTHER PRODUCTS



Non-Sparking Hand Tools



Resistance Welding Products



MIG Welding Contact Tips



Plunger Tips



Dies and Moulds



Valve Seats



Electrical Contacts



Special Applications



Manufacturing Unit:
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