

## Tungsten Alloy Radiation Container

Tungsten alloy is used in many radiation-shielding applications including industrial, nuclear and medical. Because of its high density and high atomic number, is an effective construction material for shielding against gamma rays and x-rays. Lead and boron carbide can shield radiation too, but cannot perform as well as tungsten alloy.

Tungsten alloy is a suitable raw material for tungsten alloy radiation container, because of tungsten alloy radiation container combination of radiographic density (more than 60% denser than lead), good machinability, good corrosion resistance, high radiation absorption (superior to lead), simplified life cycle and high strength. Tungsten alloy radiation shielding can provide the same degree of protection as lead whilst significantly reducing the overall volume and thickness of shields and containers. Moreover, compared with lead or depleted uranium, tungsten alloy is more acceptable in this case, for it is non-toxic and environmentally friendly material.

### Why Use Tungsten Alloy Radiation Shielding?

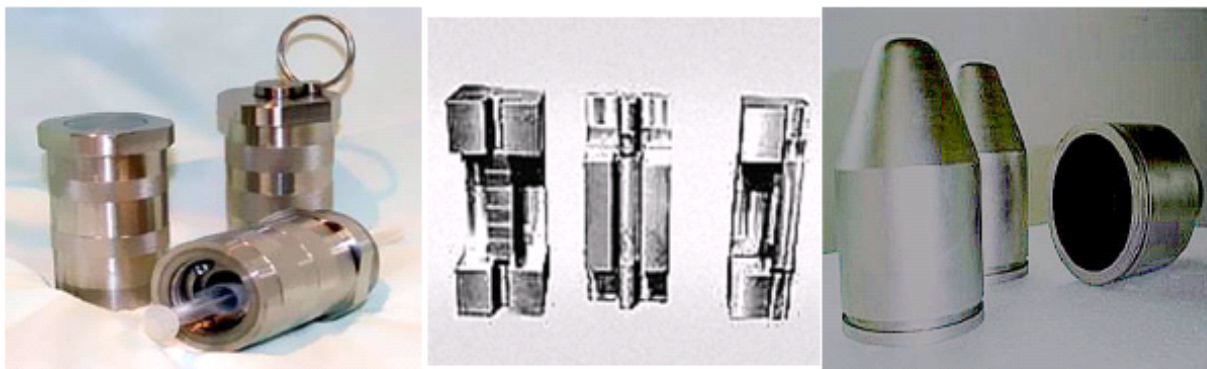
Compared to traditional radiation shielding materials such as lead and boron carbide, tungsten alloy radiation shielding provide excellent density with small capacity. At the same weights high density alloy can provide the same energy absorption as lead using 1/3 less material. When the weight is certain, more density, and the thickness would be thinner. Tungsten alloy radiation container material could be made with thinner thickness but high absorption of radiation in high density. That is why tungsten alloy material is suitable for tungsten alloy radiation shielding.

Formula:  $K = e^{0.693 d / \lambda}$

K: Shield weakened multiple

$\lambda$ : The shielding material of the half-value layer values

d: Shielding thickness, with the half-value layer thickness of their units, you need to half-value layer thickness of the quality of translation into the thickness of the material, divided by the density of the material can be obtained.



Tungsten Alloy Radiation Shielding

Tungsten  
Shielding

Alloy

Radiation  
Container

Tungsten

Alloy

Radiation

A main application of tungsten alloy products, tungsten alloy radiation containers are widely applied in medical and nuclear industries.

Owing to its excellent radiation resistance, tungsten heavy alloy has gradually replaced lead shields to become the main shielding materials in many industries to protect the radiation.

Tungsten alloy radiation container is a flexible heat-resistant tungsten alloy radiation shielding

made of tungsten and iron metal powder immersed in a silicone polymer. Lead blankets have been the backbone of tungsten alloy radiation shielding applications for years but, in comparison, is a less effective and efficient tungsten alloy radiation shielding choice. Due to the ability to place the maximum amount of weight between the source and the worker, the new generation tungsten alloy radiation shielding has proven to be up to twice as effective as lead in lowering exposure rates. Designed in custom shapes, tungsten alloy radiation container has the ability to field-fit, providing for attenuation of radiation totaling from 5 to 10 person-Ram/years than provided by the equivalent weight of traditional lead blanket. Additionally, the tungsten alloy radiation shielding weighs 25 to 50 percent less than lead while removing the accompanying toxicity hazard and mixed waste processing costs.

## **Tungsten Storage Container**

### **Tungsten Alloy Storage Container**

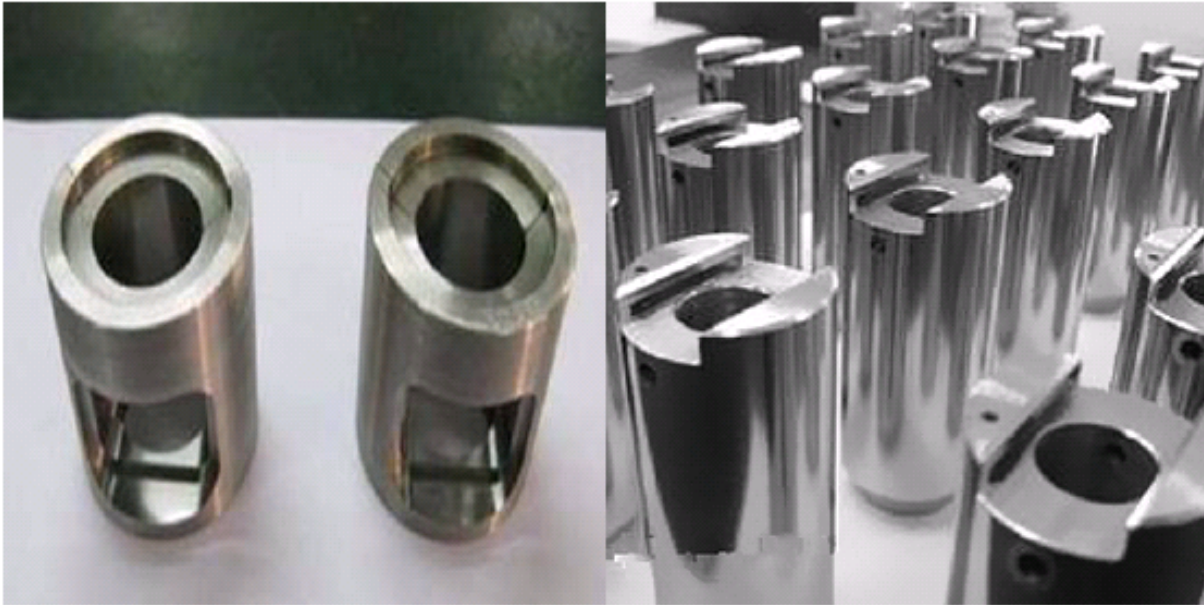
Guangxi Chentian Metal Products Co. Ltd manufactures a comprehensive line of custom designed tungsten alloy storage container designed to your exact requirements. Guangxi Chentian Metal Products Co. Ltd has worked seamlessly with end users including hospitals, laboratories, medical facilities, and Nuclear plants ensuring that a final design is functional and fits within its surroundings and radiation code requirements. We design and manufacture both standard and custom one-off designs. We employ a fully qualified design team to help with every step of the process, from the moment your order is entered until it arrives at your doorstep.

### **Application of Tungsten Storage Container**

- Storing and transporting radioactive materials
- Vial pigs for PET or other high energy radionuclides
- Unit dose pigs for radiopharmaceuticals
- Nuclear Densometer storage

### **Feature and Benefit of Tungsten Storage Container**

- Manufactured from tungsten alloy.
- Free of lead All hardware from heavy-duty hinges, to locks are of the highest quality.
- All Storage Containers are ground smooth from sharp corners or edges.
- Extreme care is taken in the surface preparation to all surfaces for the supply and application of a finish coat of paint to the desired colour.
- All Storage Containers are available with your choice in tungsten alloy shielding from 1/32" to 2" thick or more.
- All Storage Containers come equipped with a hinged lockable lid or removable lids.
- Our Storage Containers combine effective radiation protection and durability in a rugged, attractive and versatile line.



## **Cobalt 60 Tungsten Radiation Shielding**

### **What is Cobalt 60?**

Cobalt 60 (Co 60) is a synthetic radioactive isotope of cobalt with a half-life of 5.2714 years. It can emit 315KeV high speed electronic and two beams of gamma rays through beta decay. It is produced artificially in nuclear reactors. Deliberate industrial production depends on neutron activation of bulk samples of the monoisotopic and mononuclidic cobalt isotope Co 59. Measurable quantities are also produced as a by- product of typical nuclear power plant operation and may be detected externally when leaks occur. The Applications of Cobalt 60 Tungsten Radiation Shielding Due to its high density and excellent absorption behaviour against radiation, tungsten alloy can be widely used in cobalt 60 tungsten radiation shielding to protect the damage from Co 60 radiation. The main uses for cobalt 60 tungsten radiation shielding are: tracer for cobalt in chemical reactions, Sterilization of medical equipment, medical radiotherapy, industrial radiography, leveling devices and thickness gauges, pest insect sterilization, food irradiation and blood irradiation, and laboratory mutagenesis.

### **Why Use Cobalt 60 Tungsten Radiation Shielding?**

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When the weight is certain, more density, more denser, and the thickness would be thinner. Tungsten alloy material could be made with thinner thickness but high absorption of radiation in high density. That is why tungsten alloy material is suitable for radiation shielding. Cobalt 60 tungsten radiation shielding is better than lead materials for it is non-toxic.

During design of shielding, tungsten alloy radiation shielding is calculated according to requirements of shield to abate the multiple shielding materials' thickness.

Formula:  $K = e^{0.693 d / 1/2}$

K: Shield weakened multiple

1/2: The tungsten alloy radiation shielding material of the half-value layer values



### **Cesium 137 Tungsten Radiation Shielding**

#### **What is Cesium 137?**

Cesium 137 ( $^{137}\text{Cs}$ , Cs-137), Cesium 137, or radioactinium, is a radioactive isotope of cesium which is formed as one of the more common fission products by the nuclear fission of uranium-235 and other fissionable isotopes in nuclear reactors and nuclear weapons. It is among the most problematic of the short-to-medium-lifetime fission products because it easily moves and spreads in nature due to the high water solubility of cesium most common chemical compounds, which are salts.

#### **The Applications of Cesium 137 Tungsten Radiation Shielding**

Due to its high density, excellent absorption behaviour against radiation and environmental friendly characteristics, tungsten alloy can be widely used to produce Cesium 137 tungsten radiation shielding.

Cesium 137 tungsten radiation shielding can be used as place containers of Cesium 137 radiation source, and used in industrial and medical fields. Cesium 137 tungsten radiation shielding can be applied for manufacturing industrial gamma radiation source: for density measurement, thickness measurement and radiation weighting, tobacco density measurement, logging and coal exploration and development, and so on. Cesium 137 tungsten radiation shielding also can be applied for gamma radiation sources in medical: cesium chloride injection can be used for cardiac scan, diagnosis of myocardial infarction and diseases. It also be can used in agricultural and biological applications: high activity of Cesium 137 sources for radiation breeding, storage of irradiated food, sterilization of medical devices. Cesium 137 tungsten radiation shielding can be used make isotopes battery and isotope heat source.

#### **The Advantages of Cesium 137 Tungsten Radiation Shielding**

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