Military Applications Guide

T&D MATERIALS MANUFACTURING LLC
BROOMALL, PA USA
TUNGSTEN

Tungsten

Molybdenum

“Excellence through Precision”
Excellence, through Precision

Our Motto is something we achieve each and every time we produce new products for our customers.

T & D Materials high density tungsten alloys and high purity tantalum are widely used in ordnance industries around the world. The compact yet uncompromising strength found in tungsten alloys allows us to offer the highest quality in hyper-velocity, armor-penetrating applications, fragmentation devices and kinetic penetrators. Tungsten is 1.7 times greater density than lead, and 2.4 times greater than steel. Flexible manufacturing techniques and additives allow us to vary properties such as elongation, ultimate tensile strength, and hardness to ensure the best possible material for your unique needs. The production capacity of T & D Tungsten is 550 tons per year. We take the same approach to each and every project, with precision machining, strict attention to detail, and following specifications to the letter. This leads to higher performance, and excellence, through precision.

Tungsten Defense Products

- Tungsten Penetrators and Cores for all sizes of ammunition.
- Pellets for pre-fragmented ammunition.
- Other Ammunition Components.
- Blast Rings for Pre-fragmented ordnance.
- Tungsten Gyroscopic rings.
- Custom rods, bars, wire, and plates.
- Custom products based on design specs.
- Tungsten Hunting Shot.
- Tungsten Missile Weighting Systems.

Tungsten Penetrators

Technical Data

Our Tungsten is made to penetrate the most vigorous shielding to make sure that your operators are able to protect themselves from armored adversaries in the heat of combat.

Normal density: 17.60 g/cc.

T & D Tungsten reaches very high tensile and yield strength as 1,600MPa and above. While keeping a very high level of elongation and impact. The hardness is 35—45 HRC.

- Small Caliber: 5mm, 6.5mm, 7.6mm, and 10mm tungsten cores and penetrators.
- Medium Caliber: 10mm, 25mm, 30mm, and 75mm cores and penetrators.
- Large Caliber: 90mm, 105mm, 125mm, and 155mm cores and penetrators.
CUSTOM SOLUTIONS

As with any client, there will always be some customers who need products not listed on our product line, don’t worry! We specialize in manufacturing custom products for our clients!

SUSTAINABILITY

Tungsten is great alternative to lead. As industries move towards, “Greener” manufacturing processes and products that promote an environmentally friendly Earth, our products will fit into your, “Green” portfolio of products.

CONFLICT FREE MATERIALS

T&D is dedicated to providing materials that come from responsible suppliers. Our commitment to a supply chain practices that demonstrate integrity and responsibility will most certainly be an asset to your company profile! You can be proud to work with T&D as your supplier!

Tungsten Balls Technical Data
W, Ni, Fe, Co are our standard materials for these products.

Normal Density: 18 +/- 0.1 g/cc

Perfect radial crushing strength.

Ground finished with tight diameter tolerance and roundness.

Normal diameters that we produce for militaries and defense contractors around the globe are listed below:

- Small Diameters: 3mm, 4mm, 5mm, 6mm
- Medium diameters: 6mm, 7mm, 7.87mm
- Large Diameters: 8mm, 9mm, 9.525mm, 10mm

Tungsten Cubes and Cylinders Technical Data
W, Ni, Fe, Co contents

Normal Density: 18 +/- 0.1 g/cc

Perfect radial crushing strength.

Our tungsten cubes are used in ordnance around the world to provide a devastating effect upon impact; tungsten makes any anti-personnel ordnance much more effective at eliminating targets and reduces risk to friendly personnel.

- 1.94mm x 1.94mm x 1.94mm, cubes
- 3mm x 3mm x 3mm, cubes
- 5mm x 5mm x 5mm, cubes
- 6mm x 6mm x 6mm, cubes
- 5.0mm dia x 20mm L, cylinders
- 6.5mm dia x 18mm L, cylinders
- 9mm dia x 19mm L, cylinders
- 10mm dia x 20mm L, cylinders

T&D Materials “Excellence Through Precision”
TUNGSTEN BULLET CORES

Through the process of MIM technology we make or machine finished bullet cores according to your specifications. Extreme high density, tensile strength, and hardness is available.

HELCOPTERS AND AIRCRAFT

For fighters and aircraft, we supply; propeller blades, structures and RAM air turbines. For Helicopters, we supply rotor-vibration damping masses, anti-torque rotor balancing, blade balancing, and anti-vibration systems.

“SCATTER” or FRAG GRENADES

Tungsten alloy has good properties of high density with small volume, good corrosion resistance, high temperature resistance and high durability. These properties are why Tungsten is widely used in Scatter Grenades.

Tungsten Gyroscope Technical Data

Tungsten Gyroscopes are used in avionics equipment in both commercial and defense markets.

Listed below are the properties of our tungsten Gyroscopes:

100% non-Magnetic

Meet all your physical properties requirement.

OD: 15—65mm
ID: 6-40mm
H: 15-40mm

Tungsten Blast Rings

W, Ni, Fe, Co contents

Normal Density: 17.5 +/-0.1 g/cc

Tungsten Blast rings are used in missiles and ordnance by military and defense companies throughout the world!

Because there are many sizes and variables to these products, please contact us for technical information and for more product information!
TUNGSTEN USED IN MISSILES

Tungsten is very often used in missiles that require penetration, such as cruise or bunker-buster missiles. These missiles require large 500-1000lb rods of tungsten to aid in Kinetic Energy penetration!

LEAD FREE HUNTING SHOT

Tungsten is being used as a lead-free alternative in hunting shot now that many areas require you to hunt with environmentally friendly ammo! T&D manufactures shot for several groups around the world.

MILITARY AEROSPACE USES

Tungsten is used in counterweighting systems and in attack copters and fighters for weighting. Tungsten has been a proven reliable asset for these applications, and continues its uses throughout many prototypes in this industry to this day!

Tungsten Shaped Charge Liners

W, Ni, Fe, Co are our standard materials for these products.

Normal Density: 18 +/- 0.1 g/cc

A new product for us, shaped charge liners are a great addition to missiles and other ordnance because they help add penetration when required.

Throughout the world, there are those who evade military action by hiding deep underground in caves or bunkers; to eliminate these targets, tungsten shaped charge liners in used to assist in kinetic energy penetration, without boots on the ground!

Tungsten vs. Depleted Uranium or Lead

Tungsten is the best alternative on the market today to DU or Lead because of its environmentally conscious nature. On the firing range, and after the combat is over on the battlefield, lead and DU destroy the environment, causing battles to be even more destructive, even years after it is over.

DU is recycled or depleted uranium, which carries toxicity and radioactivity, and over time can do damage to soldiers health, as well as having extremely detrimental effects on the environment. Many manufacturers use DU because it is cheap, and often times free, but the cost of tungsten is well worth the preventative measures it provides to both the environment and to the personnel that use the products.

Tungsten is also a great alternative to lead for the same environmental reasons, as well as the fact that many agencies and countries are now banning the use of lead as it becomes more and more impactful on our environment. Lead, again, is cheap, much like DU, but Tungsten is the safe and responsible choice for todays business leader.
Frangible Ammunition and Green Bullets

Frangible ammunition is designed to powderize upon impact with hard surfaces to prevent ricochet risks and improve safety during close-quarters combat. Frangible ammunition represents the first viable revolutionary change to firearms science in the past 100 years. Perhaps more significantly, frangible ammunition has become a huge player in the ammunition industry as it offers a lead free alternative to traditional lead rounds. Frangible bullets are not made from a lead projectile covered with a copper jacket, but rather are produced with composite materials of tungsten, copper, or tin utilizing an injection molding or powder metallurgical production process.

Traditional lead ammunition is being phased out for “green bullets,” which National and World Practical Shooting Champion Todd Jarrett calls the “bullets of the future.” Expanded regulations issued by the Environmental Protection Agency have forced the closing of the country’s last bullet-producing lead smelter—a facility operated by Doe Run company in Herculaneum, Mo.—as of Dec. 31, 2013. To date, two dozen states, including California, have banned bullets made with the soft but toxic metal. Additionally, the military has announced plans to phase out lead bullets entirely by 2018. Given the direction of federal and state regulation and the military’s goals, experts agree that lead bullets will be all but phased out within a few years to be replaced by green bullets.

T&D Lead Free Frangible Projectiles

One of the first and most significant applications of T&D High Gravity Compounds to date has been in the production of nontoxic lead free projectiles. Originally developed as lead free training projectiles for military and law enforcement personnel, our tungsten and copper based composite materials are ideal for indoor ranges and close-quarters combat training. The use of T & D lead free frangible projectiles injection molded with either copper-filled or tungsten-filled compounds in small caliber rifle and handgun frangible ammunition improves safety and eliminates the risk of lead contamination at firing ranges. Moreover, our frangible projectiles are produced using a highly controlled injection molding process able to meet the strictest of tolerances to ensure repeatable performance with full function and reliability. Our projectiles have passed strict ballistic performance testing by the military and are a 100% ballistic match to lead based projectiles at 25m for pistol ammunition and 100m for rifle ammunition. We are continuously refining and improving our composite materials and are developing new formulations to satisfy additional projectile and ammunition designs and applications.
North American Headquarters
Located in Broomall, PA, USA. T&D Materials Manufacturing LLC manages sales and a large quantity of both North American and European projects and inquiries!

Canada Sales Office
Serving our Canadian Oil and Gas clients with a day-to-day presence. As well as assisting with customer care internationally.

TD Tungsten Alloys MFG.
Our Manufacturing is done here at our China facility. Centered in the heart of the world’s tungsten and tantalum supply chain, we positioned ourselves here to ensure that we can maintain supply chain reliability for decades to come.

T&D Materials Manufacturing International
T&D Manufacturing has been an international name in specialty metals and alloys for over 20 years! This experience has given us an edge in the manufacturing industry and that allows us to save our customers valuable time and resources!

We are a custom manufacturer, manufacturing small parts used in electronics all the way up to large penetrators and rods used in military applications. With a dedicated international staff that is committed to customer care and value added service, we have become a major provider of tungsten and tantalum around the globe. Our customers return to us when they require items delivered on time, at cost, and according to specs. Hundreds of clients around the world have trusted T&D Manufacturing with their products, and are part of our global family!

Contact us today to see the T&D Difference!
T&D Tungsten Alloys and Tantalum

“Excellence Through Precision”

Your company will benefit from our 20+ years of experience in specialty metal manufacturing! Being committed to quality and conflict-free supply chain structures, we are an ideal partner for your raw or finished material needs! Bringing a dedicated customer service and project management team, along with support throughout your entire purchasing process, we will be there every step of the way as a supply chain expert, and as a consultant for any other projects that you may need tungsten, tantalum, molybdenum, or carbide for!

Call or Email today for more information, and let us show you the T&D Difference!

To Purchase or For More Information Please Contact:
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T&D Materials “Excellence Through Precision”

We are looking for outside sales consultants!

T&D Manufacturing is looking for sales consultants with experience in sales in the military industry to help increase our portfolio! Multi-lingual consultants are preferred!

If you are interested in this position, please contact the project manager!

T&D Materials Manufacturing

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