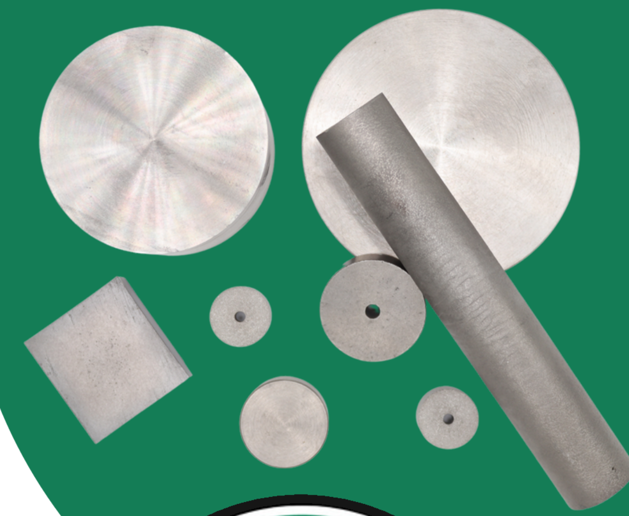
TUNGSTEN HEAVY ALLOYS

Strength and weight meets high quality engineering



FEATURES

Tungsten heavy alloys are high-density materials primarily composed of tungsten (at least 90%) with additions of nickel, iron, or copper. They are known for their exceptional density, strength, and resistance to corrosion. These alloys are used in various applications where high weight and strength are needed, including radiation shielding, counterweights, and bullet cores.

Composition and Properties:

- W-Ni-Fe and W-Ni-Cu alloys are the most common types of tungsten heavy alloys.
- High Density: Tungsten heavy alloys are one of the densest materials known, about 1.7 times that of lead.
- High Strength: Exhibit high tensile strength, making them suitable for demanding applications.
- Corrosion Resistance: Resistant to corrosion from most chemicals and environments.
- Machinability: Can be machined into complex shapes using conventional techniques.
- Thermal Performance: Have good thermal properties and can withstand high temperatures, though strength may decrease above 500°C.

TRUSTED MANUFACTURER

Thomas & Skinner is a trusted provider of high-performance metal solutions. We're a trusted leader in producing high quality tungsten heavy alloys that provide solutions across a range of applications. Our engineers have a deep understanding of the science behind our high performance metals allowing us to provide world-class customer service and expertise to provide solutions to optimize design performance based on your unique needs.

100% EMPLOYEE OWNED

THOMAS & SKINNER INC.

HIGH DENSITY

HIGH STRENGTH

CORROSION RESISTANCE

MACHINABILITY

VERSATILITY

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Thomas and Skinner, Inc.
High Performance Metals

DFARS Compliant ITAR AS9100D CERTIFIED ISO 9001

TUNGSTEN HEAVY ALLOYS

ADVANTAGES

- **High Density:** Provides a significant amount of weight in a relatively small volume.
- **High Strength:** Offers excellent mechanical properties and resistance to deformation.
- **Corrosion Resistance:** Suitable for use in harsh environments.
- **Machinability:** Can be shaped and fabricated into complex geometries.
- **Versatility:** Suitable for a wide range of applications.

APPLICATIONS

- **Radiation Shielding:** High density and ability to absorb radiation make them ideal for shielding applications.
- **Counterweights:** Used in various applications to provide the necessary weight and balance.
- **Ordnance Products:** Used in the production of bullet cores and other ordinance components.
- **Balancing Weights:** Suitable for balancing weights in machinery and other applications.
- **Industrial Applications:** Used in a variety of industrial applications where high density and strength are required.
- **Medical Applications:** Used in medical devices and imaging equipment.
- **Sporting Applications:** Used in golf clubs and other sporting equipment to add weight.

TUNGSTEN HEAVY ALLOYS (WHAs)
Summary of materials and performance

	Designation	T&S 1000	T&S 2925	T&S 2000	T&S 3000	T&S 3925	T&S 3950	T&S 3970
	Alloy	W-6Ni-4Cu	W-4Ni-3.5Cu	W-3.5Ni-1.5Cu	W-7Ni-3Fe	W-5.25Ni-2.25Fe	W-3.5Ni-1.5Fe	W-2.1Ni-0.9Fe
	ASTM B-777	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3	Class 4
	AMS7725	Class 1 Type 1	Class 2 Type 1	Class 3 Type 1	Class 1 Type 2	Class 2 Type 2	Class 3 Type 2	Class 4 Type 2
	Mill-T-21014D	Class 1	Class 2	Class 3	Class 1	Class 2	Class 3	Class 4
Typical Values	Density gc/cc	17	17.5	18	17	17.5	18	18.5
	Density lbs/cu in	0.614	0.632	0.650	0.614	0.632	0.650	0.668
	Hardness(HRC)	24	27	30	25	27	28	30
Minimum Values	Yield Strength(KSI)	75	75	75	75	75	75	75
	Yield Strength(MPa)	517	517	517	517	517	517	517
	Ultimate Stength(KSI)	94	94	94	110	110	105	100
	Ultimate Stength(MPa)	648	648	648	758	758	724	689
	Elongation(%)	2	2	1	5	5	3	2
	Magnetic Permeability	<1.05	<1.05	<1.05	>1.05	>1.05	>1.05	>1.05

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