



宝鸡难熔金属开发公司

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TUNGSTEN ALLOY PRODUCTS

● TUNGSTEN COPPER ALLOY

❖ Products properties:

Tungsten Copper Alloy (Copper Tungsten, CuW, or WCu) is a pseudo-alloy of copper and tungsten.

—Tungsten:High melting point(W-3410°C,Cu-1083°C)

High-density(W-19.3g/cm³,Cu-8.92g/cm³)

—Copper:Thermal conductivity of superior performance

—Homogeneous microstructure

—High temperature resistant

—High strength

—Arc ablation resistance

—High-density

—Electrical conductivity,

thermal conductivity suitable

Properties	Density g/cm ³	Thermal Expansion Coefficient 10 ⁻⁶ /°C	Thermal Conductivity w/(m·k)	Hot melts J/(kg·°C)	Point °C	TRS MPa
W	19.3	4.5	174	136	3410	550
Cu	8.92	16.6	403	385	1083	120

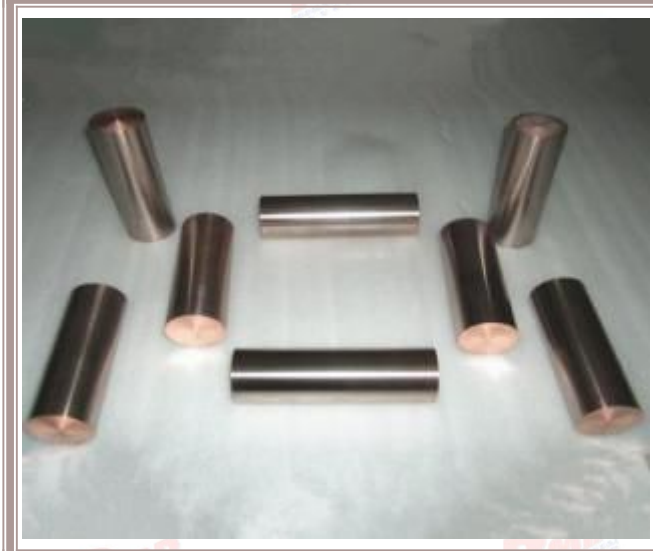
❖ **Range of use:**

Grade	Density /g·cm ⁻³	UTS/Mpa		Hardness HB	Electrical Conductivity /MS·m ⁻¹	Used
		20°C	1600°C			
WCu7	17.3~17.8	400~750	50~120		1	Nozzle, gas rudder
WCu10	16.8~17.3	400~700	60~100	180~220		Nozzle, gas rudder
WCu15	16.0~16.5	300~600		170~200		Tip,component, Infiltration of barium salt electron cathode
WCu20	15.1~15.5			140~160	20	contact,Electrode
WCu30	13.7~14.2			110~130	25	contact,Electrode,liner
WCu40	12.7~13.2				29	contact,Electrode
WCu50	11.7~12.2				33	contact,Electrode

❖ **Chemical Composition:**

Grade	Chemical Composition %			Mechanical properties			
	Cu	Impurity	W	Density (g/cm ³)	Hardness HB	Conductivity IACS/ %	TRS Mpa
CuW(50)	50+2.0	0.5	Balance	11.85	115	54	
CuW(55)	45+ 2.0	0.5	Balance	12.30	125	49	
CuW(60)	40+2.0	0.5	Balance	12.75	140	47	
CuW(65)	35+2.0	0.5	Balance	13.30	155	44	
CuW(70)	30+2.0	0.5	Balance	13.80	175	42	790
CuW(75)	25+2.0	0.5	Balance	14.50	195	38	885
CuW(80)	20+2.0	0.5	Balance	15.15	220	34	980
CuW(85)	15+2.0	0.5	Balance	15.90	240	30	1080
CuW(90)	10+2.0	0.5	Balance	16.75	260	27	1160

❖ Products Show:



● Tungsten Heavy Alloy

✧ Products properties:

- Tungsten heavy alloys have two-phase composites consisting of W-Ni- Fe or W-Ni- Cu or even W-Ni-Cu-Fe, some tungsten alloy are added Co、 Mo、 Cr, etc.
- They have very high melting point and have a density twice that of steel and are more than 50% heavier than lead.

Tungsten content in conventional heavy alloys varies from 90% to 98%

- Have good ductility ,easy to machine. Nickel-iron is the most popular additive.

✧ Range of use:

- Tungsten heavy rod, bar, cube, brick, block, plate for various applications
- Tungsten billet/barrel as main body of professional darts
- Screws/heads for golf club, flying fish sinker
- Counterweight used in yacht, sailboat, submarine and other vessels
- Ballast for aircraft, helicopter, F1 racing cars, and other vehicles
- Kinetic energy penetrators for defeating heavy armor
- Governor balance weight, holders for Oil Well Logging
- Cubes/balls for bullet, rifle, missile and bomb
- Radiation shield, source holder for nuclear U-power, X-ray, and medical instruments parts etc
- Bobs/vibrators for mobile phone, clock
- Tungsten-thoria guide nozzles

✧ **Chemical Composition:**

Chemical Composition	Density (g/cm ³)	Hardness(RC)	Ductility(%)
90W6Ni4Cu	17	24	6
90W7Ni3Fe	17	25	10
92.5W5.25Ni2.25Fe	17.5	26	7
95W3.5Ni1.5Cu	18	27	7
95W3.5Ni1.5Fe	18	27	7
97W2.1Ni0.9Fe	18.5	28	5

✧ **Products Show:**

