



## Company Introduction

HOSO Metal CO., LTD is an enterprise for manufacturing powder metallurgy material, casting copper alloy and high precision parts. From powder to alloy to finished parts, we provide one-stop service to customers.

We research and develop products for per customer's applications. Our products are sold to more than 30 countries.

## Product List

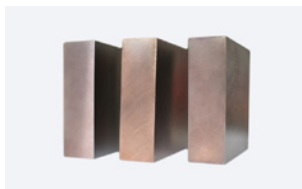
**Copper Tungsten** is the pseudo-alloy. It has thermal resist capability tungsten and high electrical conductivity copper. We have different copper tungsten series as below: "E" series is for EDM electrode, "R" series is for resistance welding electrode, "T" series is for heat sink, "G" series is for electrical contact, and "W" series is for counter weight.

We use the advanced vacuum infiltration process and all of the products fulfill the standard of GB/T8320-2003 and ASTM B702. Our copper tungsten equivalent to 5W3, 10W3, 10W53, A1WC, A10WC, A20WC, A30WC, 20W3, class10, Class11, Class12, CuW75, CuW70, CuW80 etc. Please refer to copper tungsten brochure get products details.

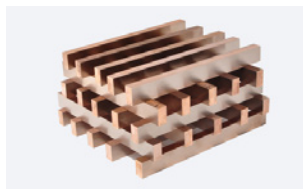
Copper Tungsten material properties:

HOSO CODE	Composition (wt.%)	Density (g/cm <sup>3</sup> )	Conductivity (% IACS)	Hardness (HRB)	Class #	RWMA
HOSOPM055	Cu45W55	12.30	55	70	10	10.74450
HOSOPM070	Cu30W70	14.0	45	85		
HOSOPM075	Cu25W75	14.5	40	92	11	11.74400
HOSOPM075R	Cu25W75	14.7	45	98		
HOSOPM080	Cu20W80	15.20	34	103	12	12.74350
HOSOPM085	Cu15W85	15.90	30	240HB		

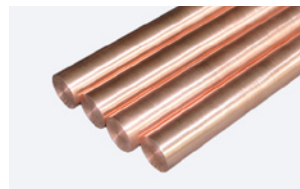
• Above is typical properties only for reference.



Thick Plate(50mm)



Rectangular Bar



Rod



Triangle Bar



Thin Sheet(1.2mm)



Wire(0.5mm)



CuW With Iron Shank



CuW Outside Casting Copper



Electrical Contacts



CuW Electrical Contact



Heat Sink



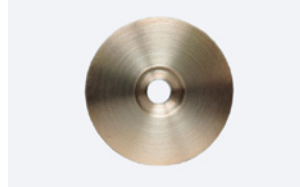
IPC Base Plate



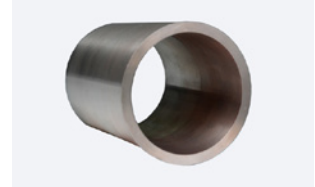
PCD Tools Grinding Wheel  
TE Type



PCD Tools Grinding Wheel  
CE Type



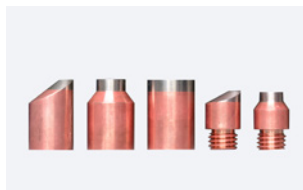
PCD Tools Grinding Wheel  
UE Type



Copper Tungsten Tube



Nut Welding Electrode



Spot Welding Electrode



Cemented Carbide Tools Die  
Sink EDM Electrode



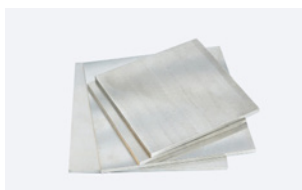
CuW Parallel welding wheel

**Silver Tungsten** is the pseudo-alloy. Our silver tungsten products has very high density and electrical conductivity. We focus on different industrial applications to produce different silver tungsten products. we use the advanced vacuum infiltration process and all of the products fulfill the standard of GB/T8320-2003 and ASTM B631. Our tungsten silver equivalent to 2088, 20S, 30S, 35S, 50S, 4050, 20SB, 35SB, 2110, 2150 etc. Please refer to silver tungsten brochure get products details.

Tungsten material properties:

HOSO CODE	Composition (wt.%)	Density (g/cm <sup>3</sup> )	Conductivity (% IACS)	Hardness (HRB)
HOSOPM150	Ag50W50	13.15	57	62
HOSOPM160	Ag40W60	14.00	51	72
HOSOPM170	Ag30W70	14.90	45	80
HOSOPM175	Ag25W75	15.40	41	85

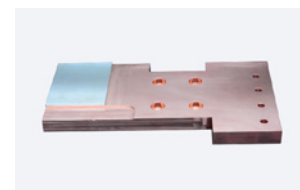
• Above is typical properties only for reference.



Silver Tungsten Plate



Silver Tungsten Rod



Silver Tungsten Contact



Silver Tungsten Contacts

**Tungsten Carbide Copper** has very good mechanical strength and perfect arc wear resistance capability. Based on these significant characteristics; it is used widely in the vacuum electrical contacts. We use the press-sintering-infiltration process to produce the tungsten carbide copper alloy (CuWC).

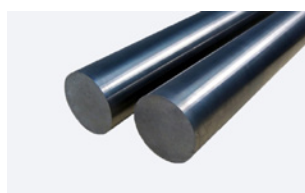
tungsten carbide copper material properties:

HOSO CODE	Product Name	Composition (wt.%)	Conductivity (% IACS)	Hardness (HRB)
HOSOPM249	TC5	Cu50WC50	45	90
HOSOPM256	TC10	Cu44WC56	42	96
HOSOPM270	TC20	Cu30WC70	30	18HRC

• Above is typical properties just for reference.



Plate



Grinding Rod



CuWC Parts

**Silver Tungsten Carbide** was made by Powder metallurgy vacuum infiltration process, compared with the traditional process, it has higher density and lower oxygen content. Silver tungsten carbide is used for contact material with high hardness and good conductivity etc.

Silver Tungsten Carbide material properties:

HOSO CODE	Composition (wt.%)	Density (g/cm <sup>3</sup> )	Electrical Conductivity (% IACS)	Hardness (HRB)
HOSOPM350	Ag50WC50	12.20	50	85
HOSOPM340	Ag60WC40	11.70	60	72
HOSOPM330	Ag70WC30	11.20	65	57

• Above is typical properties just for reference.



Plate



Rod



AgWC Product

## Product List

**Pure Tungsten** is the best choice for high temperature applications. it can keep high tensile strength under the high temperature, because the melting point of tungsten is 3410°C. The "HOSOPM®900" products fullfil the standard of GB/T 3875-2006 and equivalent to W, RWMA Class 13,100W, Tungsten etc.

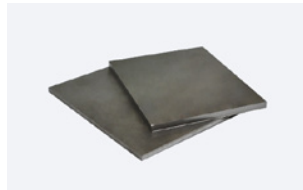
Pure Tungsten material properties:

HOSO CODE	Product Name	Composition (wt.%)	Density (g/cm <sup>3</sup> )	Conductivity (% IACS)	Hardness (HRC)	Class #	RWMA
HOSOPM900	W	99.95	19.30	30	36	13	13.74300

• Above is typical properties only for reference.



Tungsten Rod



Tungsten Plate



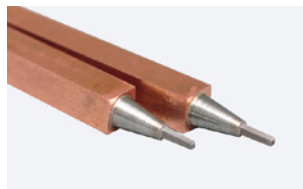
Tungsten Electrode



Tungsten Electrode



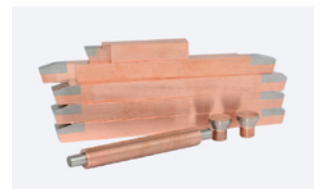
W Tips Spot Welding Electrode



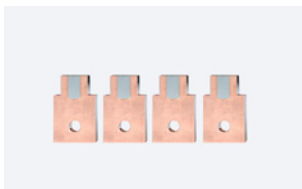
W Tips Spot Welding Electrode



W Tips Spot Welding Electrode



W Tips Spot Welding Electrode



W Tips Spot Welding Electrode



W Tips Spot Welding Electrode



W Tips Spot Welding Electrode



W Tips Spot Welding Electrode



**Molybdenum** is a special material. The most important reason of applying widely is high melting point(2620°C). Molybdenum can be used widely based on good performance under corrosion environment. Our product strictly following the standard of GB/T 3462-2007, ASTM B386-91, the equivalent Grade: Mo, RWMA Class 14, 100M, Molybdenum.

Molybdenum material properties:

HOSO CODE	Product Name	Composition (wt.%)	Density (g/cm <sup>3</sup> )	Conductivity (% IACS)	Hardness (HRB)	Class #	RWMA
HOSOPM800	Mo	99.95	10.10	30	90	14	14.423

• Above is typical properties just for reference.

**Oxide Dispersion Strengthens Copper** also called as DSC, ODSC, Al<sub>2</sub>O<sub>3</sub> copper. The copper alloy material is used 12 to 25 nm tiny Al<sub>2</sub>O<sub>3</sub> particles to reinforce copper matrix. The ODSC has high strength, high hardness, high conductivity and high softening temperature performance at elevated temperature.

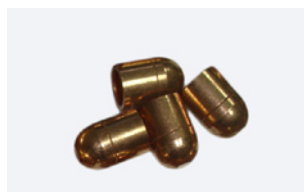
ODS Copper material properties:

HOSO CODE	Grade	Composition Al (wt.%)	Electrical Conductivity (% IACS)	Hardness (HRB)
HOSOCU150H	AL15	0.15	92	68
HOSOCU150H	AL25	0.25	87	72
HOSOCU150H	AL60	0.60	78	80

• Above is typical properties only for reference.



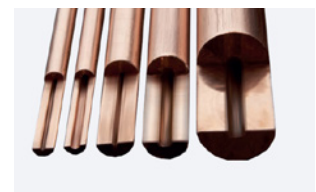
ODS Copper Rod



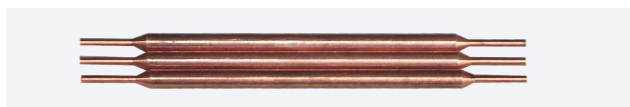
ODS Copper Electrode Cap



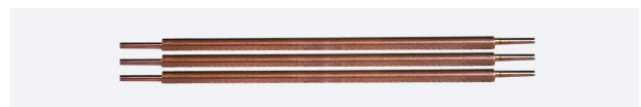
ODSC Seam welding Wheel (Dia.300mm)



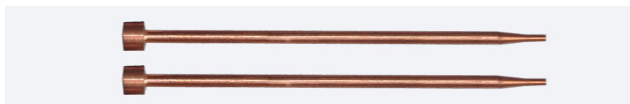
ODS Copper Tube



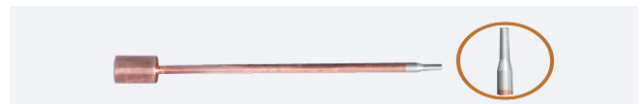
Center Symmetric Battery Welding Electrode



Unsymmetric Battery Welding Electrode



Center Symmetric Battery Welding Electrode



Molybdenum Tips Battery Welding Electrode

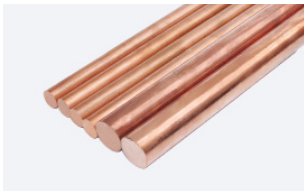
**Chromium Zirconium Copper** has very good mechanical properties by adding chromium and zirconium elements. Our CrCu and CrZrCu was made by vacuum casting – hot forging – solid solution – cold forging and heat treatment to get the high electrical conductivity and hardness.

CrCu & CrZrCu material properties:

HOSO CODE	Product Name	Composition (wt.%)	Density (g/cm <sup>3</sup> )	Electrical Conductivity (% IACS)	Hardness (HRB)
HOSOCU201	CrCu	Cr: 0.6~1; Cu: balance	8.80	85	70
HOSOCU202	CrZrCu	Cr: 0.5~1.5 ; Zr: 0.05~0.25 Cu: balance	8.80	80	80
HOSOCU203	ZrCu	Zr: 0.2-0.3, Cu: balance	8.80	89	65

• Above is typical properties just for reference.

## Product List



Rod



Plate



Electrode Caps



Parallel Seal Welding Electrode

**Beryllium Copper** is composed of copper and beryllium elements. It is a supersaturated solid solution of copper base alloy and non-ferrous alloy with good mechanical properties, physical properties, chemical properties and corrosion resistance.

BeCu material properties:

HOSO CODE	Product Name	Composition (wt.%)	Density (g/cm <sup>3</sup> )	Electrical Conductivity (% IACS)	Hardness (HRB)
HOSOCU301	BeNiCu	Be: 0.20-0.4 , Ni: 1.8-2.8 Cu: balance	8.80	50	98 HRB
HOSOCU302	BeCoCu	Be: 0.40-0.7, Co: 1.8-2.50 Cu: balance	8.80	55	95 HRB
HOSOCU400	BeCu	Be: 1.7-1.85 Cu: Balance	8.80	18	36 HRC

• Above is typical properties just for reference.



BeCu Rod



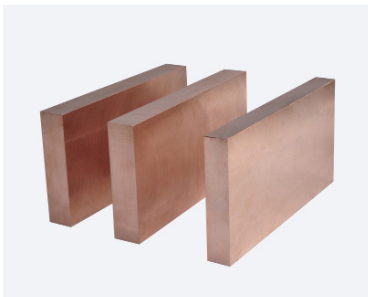
BeCu Block



BeCu Wheel



Parallel Seal Welding Electrode



**Nickel Silicon Copper** is composed of copper, nickel and silicon elements. Through vacuum casting – hot forging – solid solution process – cold forging and heat treatment to get the high conductivity, high thermal conductivity, high hardness, high wear resistance, creep resistance and corrosion resistance of silicon bronze alloy products.

Nickel Silicon Copper material properties:

HOSO CODE	Product Name	Composition (wt.%)	Density (g/cm <sup>3</sup> )	Conductivity (% IACS)	Hardness (HRB)	RWMA
HOSOCU303	CuNiSi	Si: 0.60-1.1, Ni: 2.4-3.4, Cu: balance	8.80	40	90	Class3
HOSOCU304	CuNiSiCr	Cr: 0.4-.8, Si: 0.4-0.8, Ni: 1.8-2.8, Cu: balance	8.80	48	90	

• Above is typical properties just for reference.

# HOSO 和鐸®

Our registered trademarks as below:

## HOSOPM®

This registered trademark included tungsten, molybdenum, copper tungsten, silver tungsten and the other refractory metal products.

## HOSOCU®

This registered trademark included Chromium copper, Chromium zirconium copper, Oxide dispersion strengthens copper, beryllium copper and the other special copper alloy materials.

## HOSOCP®

This registered trademark included the precision parts of Electrical Discharge Machine, resistance welder, Electrical equipment and electric power industrial equipment.



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