

Product manual of tungsten wire product



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BRIEF INTRODUCTION

We are mainly focusing on the development, production and sale of tungsten powder, tungsten rods, tungsten bars, tungsten wires and tungsten filaments, etc. Our products are widely applied in industries like electrical lighting, electrical vacuum, semiconductor & electronic technology, automobile, industrial furnaces, mechanical machining, machine manufacturing, welding and the like. We have a production capacity of 600 tons tungsten product and 5 billion meters tungsten filament.

We excellently control the impurity content by acid washing and vertical sintering process, it benefits the quality in further processing. We improve the traditional process and adopt 3 kilograms tungsten rods for butt welding process, it reduce the cost and improve the production efficiency.

Our main products are high purity tungsten powder, doped tungsten powder, high purity tungsten bars, doped tungsten bars, tungsten rods, coarse tungsten wire, fine tungsten wire, cleaned tungsten wire, etc.

READING GUIDE

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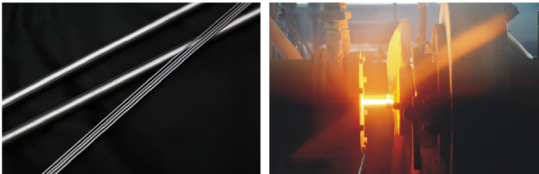
» Specification

Code		Shape	Size (mm)	Single weight (kg)	Length (mm)	Taper (mm)
CCW92	CCW61	Round	Φ17.0*750	2.65~3.00	720~780	15.5~17.2
CCW91	CCW31					

» Chemical Composition

Code	Tungsten content (wt%)	Max. content of impurities (ppm)					
		K	Fe	Al	Mo	As/Ca/Cr/Mg/Mn/Na/Ni/Ti/Si	Bi/Cd/Cu/Pb/Sb/Sn
CCW92	99.95	80 ~ 100	20	15	30	10	5
CCW91	99.95	70 ~ 90	20	15	30	10	5
CCW61	99.95	60 ~ 75	20	15	30	10	5
CCW31	99.95	40 ~ 60	20	15	30	10	5
Analysis method	Minusing	AAS	AAS	ICP	ICP	AAS/ICP	ICP

Tungsten Rod



» Application

It is mainly used to prepare various emitting cathodes, shaping rods, lead wire, electrode mandrel and the like by mechanical machining.

Code	Application
CCW91	It is used for emitting cathodes, high temperature shaping rods, etc.
CCW61	It is used for emitting cathodes, low temperature shaping rods, etc.
CCW31	It is used for lead wires, electrode mandrel, etc.

» Specification

Surface	Forged/Alkaline cleaned		Straightened/Alkaline cleaning		Polished		Length tolerance (mm)
Size(mm)	Dia. Tolerance (mm)	Ovality (mm)	Dia. Tolerance (mm)	Ovality (mm)	Dia. Tolerance (mm)	Ovality (mm)	
0.6≤d<0.8	—	—	±0.01	≤0.01	±0.01	≤0.01	L<100±1.0 100≤L<300±1.5 300≤L<500±2.0 500≤L<1000±2.5 1000≤L<2000±5.0
0.8≤d<1.0	—	—	±0.01	≤0.01	±0.01	≤0.01	
1.0≤d<3.0	—	—	±0.02	≤0.02	±0.02	≤0.02	
3.0≤d<4.0	±0.10	≤0.10	±0.10	≤0.10	±0.02	≤0.02	
4.0≤d<6.0	±0.10	≤0.10	±0.10	≤0.10	±0.03	≤0.03	
6.0≤d<12.0	±0.20	≤0.20	±0.20	≤0.20	±0.03	≤0.03	

Coarse tungsten wire



» Application

It is drawn to prepare tungsten filaments for various lamps, spring electrodes, etc.

Code	Application
CCW92	It is drawn to make filaments for automotive lamps and high temperature halogen lamp, etc.
CCW91	It is drawn to make filaments for halogen lamp and automotive auxiliary lamps, etc.
CCW61	It is drawn to make filaments for general lamps (ordinary bulbs, energy-saving lamps).
CCW31	It is drawn to make spring electrode.

» Specification

Surface	Drawn		Electropolished	
Size (mm)	Dia. Tolerance (mm)	Ovality (mm)	Dia. Tolerance (mm)	Ovality (mm)
0.35≤d≤1.0	±0.01	±0.01	±0.01	±0.01

» Physical property

Size D (mm)	weight of single wire G (kg)	X Split quantity/kg	Brittleness	Tensile strength N/mm ²
0.35≤d<0.6	2.0≤G≤5.5	X≤35	Pass	1900~2400
0.6≤d≤1.0	2.0≤G≤11	X≤15	Pass	1850~2350
Analysis method	Electronic balance	Eddy current inspection	Bending test	Tensile strength tester

Remarks:Special requirement should be declared when placing order.

Fine tungsten wire



» Application

Fine tungsten wire is mainly used to make coils for incandescent lamps, fluorescent lamps, halogen lamps, automotive lamps, and make bearing rings of filament, etc.

Code	Potassium content (ppm)	High temperature property	Size range (mm)	Application
CCW92	80~100	Excellent	0.015 ~ 0.35	It will be made into coils for high temperature halogen lamps, automotive lamps.
CCW91	70~90	Excellent	0.015 ~ 0.35	It will be made into coils for halogen lamps, automotive auxiliary lamps, etc.
CCW61	60~75	Good	0.015 ~ 0.35	It will be made into coils for incandescent lamps, fluorescent lamps, energy-saving lamps, and bearing rings, etc.

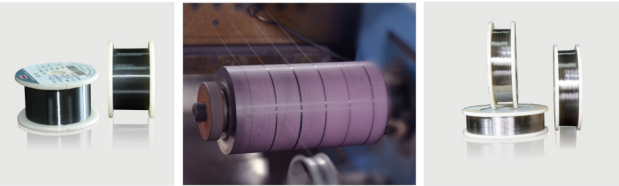
» Dimensional tolerance

Diameter (μm)	Diameter in weight (mg/200mm)	Tolerance of diameter in weight, %			Single length (m)
		0 level	I level	II level	
15≤d≤18	0.68≤p≤0.98	± 2.5	± 3.0	± 4.0	5000
18 < d≤40	0.98 < p≤4.85	± 2.0	± 2.5	± 3.0	2000
40 < d≤80	4.85 < p≤19.39	± 1.5	± 2.0	± 2.5	1000
80 < d≤300	19.39 < p≤272.71	± 1.0	± 1.5	± 2.0	300
300 < d≤350	272.71 < p≤371.18		± 1.0	± 1.5	300

Note: Dimensional tolerance and single length can be customized according to customer's requirements.

» Wire status

Product name	Code	Wire status	Straightness
Coated tungsten filaments for halogen lamp	WLH	Drawn	For straightened tungsten wires, the straightness meets following requirements: (1) Diameter d ≤ 100μm (30.3 mg), the free sagging height of 500mm wire shall not be less than 450 mm. (2) diameter d > 100μm, cut 200 mm filament and place it on a flat plate, the arc height of 100 mm chord should not exceed 10 mm.
Cleaned tungsten filaments for halogen lamp	WLB	Drawn and electropolished	
Straightened & cleaned tungsten filaments for halogen lamp	WLS	Drawn, electropolished and straightened	
Coated tungsten filaments for automotive lamp	WQH	Drawn	
Cleaned tungsten filaments for automotive lamp	WQB	Drawn and electropolished	
Straightening and cleaned tungsten filaments for automotive lamp	WQS	Drawn, electropolished and straightened	
Coated tungsten filaments for ordinary bulbs	WPH	Drawn	
Cleaned tungsten filaments for ordinary bulbs	WPB	Drawn and electropolished	



Pure acid-washed tungsten powder

» Application

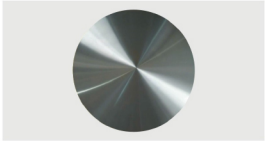
Mainly used to produce tungsten target and other high purity tungsten products.



» Physical Properties

Average F.S.S.S. particle size: 2.0~4.0µm.

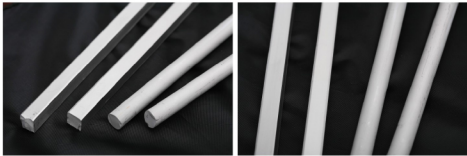
Particle Size Distribution: Upon the request of customer.



» Chemical compositions (unit: ppm)

Code	Tungsten content (wt%)	Max. content of impurities (ppm)					
		K	Fe	Al	Mo	As/Ca/Cr/Mg/Mn/Na/Ni/Ti/Si	Bi/Cd/Cu/Pb/Sb/Sn
XW11	99.99	≤ 5	10	5	20	10	5
Analysis method	Minusing	AAS	AAS	ICP	ICP	AAS/ICP	ICP

Tungsten bar



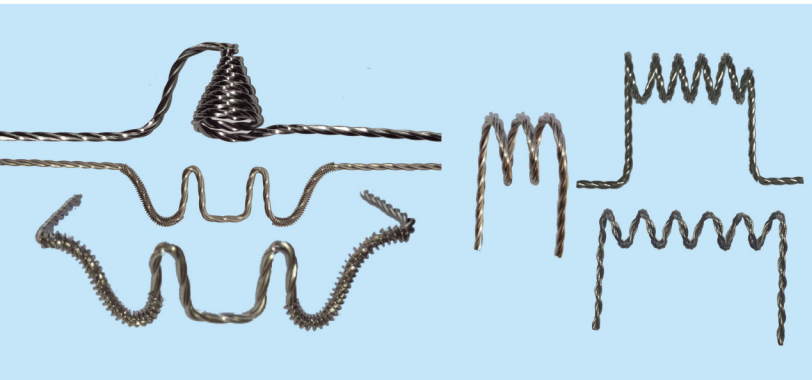
» Application

It is mainly used to prepare various high vacuum electrodes, contact materials and the like by pressure processing.

» Specification

Code	Shape	Size (mm)	Single weight (kg)	Length (mm)	Taper (mm)
XW11	Square	12*12*360	0.90~1.00	340~380	11.50~12.50
XW11	Round	Φ17.0*750	2.65~3.00	720~780	15.50~17.20

VACUUM COATING »



Tungsten wire for stranding and stranded tungsten wire



» Application

Used for heaters of vacuum coating.

Code	Potassium content (wt%)	Property and application
CCW91	0.0070～0.0090	It is used for making special high temperature resistant heater, with common processability.
CCW61	0.0060～0.0075	It is used for making high temperature resistant heater, with good processability.
CCW31	0.0040～0.0060	It is used for making common heater, with best processability.

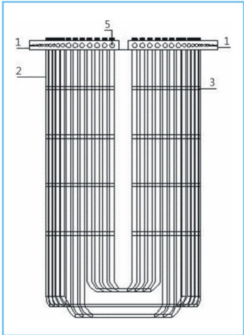
» Chemical composition

Code	W content (wt%)	Max. content of impurities (ppm)					
		K	Fe	Al	Mo	As/Cs/Cr/Mg/ Mn/Na/Ni/Ti/Si	Bi/Cd/ Cu/Pb/Sb/Sn
CCW91	99.95	70～90	20	15	30	10	5
CCW61	99.95	60～75	20	15	30	10	5
CCW31	99.95	40～60	20	15	30	10	5
Analysis method	Minusing	AAS	AAS	ICP	ICP	AAS/ICP	ICP

» Typical specifications and physical properties of tungsten wire for standing

Size (mm)	Tolerance (mm)	weight of signal wire, G (kg)	Split X (split quantity/kg)	Brittleness	Tensile strength, N/mm²
0.60	±0.01	2.0≤G≤5.5	X≤35	Qualified	1850~2350
0.76	±0.01	2.0≤G≤11	X≤40	Qualified	1850~2350
0.80	±0.01	2.0≤G≤11	X≤40	Qualified	1850~2350
0.82	±0.01	2.0≤G≤11	X≤40	Qualified	1850~2350
0.85	±0.01	2.0≤G≤11	X≤40	Qualified	1850~2350
1.00	±0.01	2.0≤G≤11	X≤40	Qualified	1850~2350
Inspection	Digital Micrometer	Electronic balance	Eddy current inspection	Bending test	Tensile strength tester

Remarks: Special requirement should be declared when placing order.



INDUSTRIAL FURNACE »

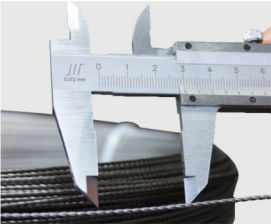
» Typical specifications and physical properties of stranded tungsten wire

Size (mm)	Single weight G (kg)	No. of stranding wire	TPI	Stranding direction	Surface status
0.60	G≥1.0	3 or 4	According to customer requirements	Right or left	Coated or cleaned
0.76	G≥1.0	3 or 4	According to customer requirements	Right or left	Coated or cleaned
0.80	G≥1.0	3 or 4	According to customer requirements	Right or left	Coated or cleaned
0.82	G≥1.0	3 or 4	According to customer requirements	Right or left	Coated or cleaned
0.85	G≥1.0	3 or 4	According to customer requirements	Right or left	Coated or cleaned
1.00	G≥1.0	3 or 4	According to customer requirements	Right or left	Coated or cleaned
Inspection	Electronic balance	Vision	Bending test	Vision	Vision



Demonstration:

No. of stranding wire	3
TPI	10/30mm
Stranding direction	Right
Surface status	Cleaned



Doped acid-washed tungsten powder



» Application

Mainly used as raw material for high temperature resistant plate and rod used in industrial furnace.

» Physical Properties

Average F.S.S.S. particle size: 3.0-4.0µm.

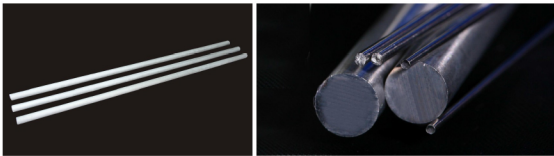
Particle size distribution : Upon the request of customer.

» Chemical compositions (unit: ppm)

Product name	Tungsten content (wt%)	Fe	Mo	K	Al	Si	O	Others
Doped tungsten powder	≥99.4	≤20	≤30	60-160	30-100	150-330	≤2000	≤10



Tungsten bar



» Application

It is mainly used to prepare thermal field tungsten rod, strapping wire, lead wire used in heating furnace for sapphire production , tungsten ropes in monocrystalline silicon melting furnace by pressure processing.

Code	Application
CCW92	It is used to prepare lead wire for heating furnace.
CCW91	It is used to prepare thermal filed tungsten rods, strapping wire, etc.
CCW61	It is used to make tungsten ropes.

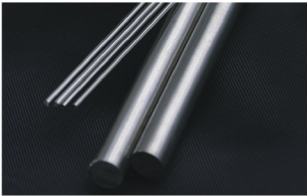
» Specification

Code	Shape	Size (mm)	Single weight (kg)	Length (mm)	Taper (mm)
CCW92 CCW91 CCW61	Round	Φ17.0*750	2.65~3.00	720~780	15.5~17.2

» Chemical composition

Code	Tungsten content (wt%)	Max. content of impurities (ppm)					
		K	Fe	Al	Mo	As/Ca/Cr/Mg/ Mn/Na/Ni/Ti/Si	Bi/Cd/ Cu/Pb/Sb/Sn
CCW92	99.95	80~100	20	15	30	10	5
CCW91	99.95	70~90	20	15	30	10	5
CCW61	99.95	60~75	20	15	30	10	5
Analysis method	Minusing	AAS	AAS	ICP	ICP	AAS/ICP	ICP

Tungsten rod



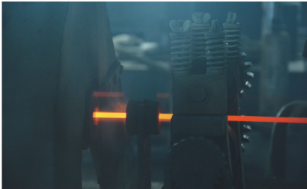
» Application

It is mainly applied in the thermal field of heating furnace for sapphire production.

Code	Application
CCW91	It is used to make the thermal field of heating furnace for sapphire production, heating component of vacuum sintering furnace, etc.

» Specification

Surface	Forged/alkaline cleaned		Straightened/alkaline cleaned		Polished		Length tolerance (mm)
Size (mm)	Dia. Tolerance (mm)	Ovality (mm)	Dia. Tolerance (mm)	Ovality (mm)	Dia. Tolerance (mm)	Ovality (mm)	
3.0≤d<4.0	±0.10	≤0.10	±0.10	≤0.10	±0.02	≤0.02	300≤L<500±2.0 500≤L<1000±2.5 1000≤L<2000±5.0
4.0≤d<6.0	±0.10	≤0.10	±0.10	≤0.10	±0.03	≤0.03	
6.0≤d<12.0	±0.20	≤0.20	±0.20	≤0.20	±0.03	≤0.03	



Coarse tungsten wire



» Application

It is drawn to prepare tungsten ropes, strapping wire, lead wire, etc.

Code	Application
CCW92	It is used for lead wire in high temperature furnace.
CCW91	It is used for strapping wire.
CCW61	It is used for tungsten ropes.

» Specification

Surface	Drawn		Electropolished	
Size (mm)	Dia. Tolerance (mm)	Ovality (mm)	Dia. Tolerance (mm)	Ovality (mm)
0.15≤d<0.35	±0.005	±0.005	±0.005	±0.005
0.35≤d<1.5	±0.01	±0.01	±0.01	±0.01
1.5≤d<2.0	±0.015	±0.015	±0.015	±0.015

» Physical properties

Size D (mm)	weight of single wire G (kg)	Split X (split quantity/kg)	Brittleness	Tensile strength N/mm ²
0.15≤d<0.35	0.1≤G≤5.5	X≤35	Pass	2100~2700
0.35≤d<0.6	2.0≤G≤5.5	X≤35	Pass	1900~2400
0.6≤d<1.0	2.0≤G≤11	X≤15	Pass	1850~2350
1.0≤d<2.0	2.0≤G≤11	X≤15	Pass	1750~2250
Analysis method	Electronic balance	Eddy current inspection	Bending test	Tensile strength tester

Remarks: Special requirement should be declared when placing order.

» Specification

Code		Shape	Size (mm)	Single weight (kg)	Length (mm)	Taper (mm)
CCW92	CCW61	Round	Φ17.0*750	2.65~3.00	720~780	15.5~17.2
CCW91	CCW31					

» Chemical Composition

Code	Tungsten content (wt%)	Max. content of impurities (ppm)					
		K	Fe	Al	Mo	As/Ca/Cr/Mg/Mn/Na/Ni/Ti/Si	Bi/Cd/Cu/Pb/Sb/Sn
CCW92	99.95	80 ~ 100	20	15	30	10	5
CCW91	99.95	70 ~ 90	20	15	30	10	5
CCW61	99.95	60 ~ 75	20	15	30	10	5
CCW31	99.95	40 ~ 60	20	15	30	10	5
Analysis method	Minusing	AAS	AAS	ICP	ICP	AAS/ICP	ICP