

### **Black Tungsten Wire**

Black tungsten wire is tungsten wire with graphite coated. The important applications of black tungsten wire are for the production of coiled incandescent lamp filaments, cathode and support structures for power tubes, heating elements for high temperature furnaces and evaporation sources in metalizing processes. Thicker wire sizes, straightened, finish-ground and cut into rod pieces are widely used for glass-to-metal seal lead parts in the lighting and electronic industries.

### **Cleaned Tungsten Wire**

Cleaned Tungsten Wire is raised foreign elements and graphite from black tungsten wire. Cleaned Tungsten Wire is the surface of electrolytic polished tungsten wire, and it shall be smooth, clean, gray silver with metal luster. The tungsten wire features excellent formability, long life and super lighting efficiency. Cleaned tungsten wire is mainly applied for making various electron tubes, H series auto lamp, halogen lamp and other special lamp.

### **Tungsten Rhenium Wire**

Tungsten rhenium wire is used for heating elements in high temperature furnaces, thermocouples and in electronics. Its advantage is its ability to maintain greater ductility compared to tungsten after exposure to extremely high temperatures. Tungsten wire has fiber structure, when the temperature reaches 1500-1600 °C, the tungsten filament would turn, and cause high-temperature sag. To improve the quality of tungsten wire, it is always mixed some additives during sintering procession, such as Na<sub>2</sub>O, K<sub>2</sub>O, SiO<sub>2</sub>, ThO to enhance the capacity of high-temperature creep resistance and high temperature anti-sag of tungsten wire. In order to improve the tenacity of tungsten wire and prevent the deformation under high temperature, it usually added some oxides, such as silica, alumina, and potassium and so on.

### **Gold Plated Tungsten Rhenium Wire**

Gold plated tungsten rhenium wire is namely tungsten rhenium wire plated with gold. Tungsten rhenium wire is a kind of tungsten wire, made with tungsten and rhenium.

### **Non-sag Tungsten Wire**

Non-sag tungsten is tungsten doped with the element of K (potassium) or other elements to achieve the effect of non-sag of the tungsten wire. Doping with K can form bubbles in tungsten wire, which can prevent the recrystallization of the tungsten wire. And they are also responsible for their outstanding low resistance of non-sag tungsten at high temperatures of a glowing lamp filament. About 90% of non-sag tungsten is used in incandescent lamps.

### **Stranded Tungsten Wire**

Stranded tungsten wires element features high melting point and high corrosion resistance, mainly applied for aluminizing kinescope, chromo scope, mirrors, plastics and heater elements for decoration articles, Stranded tungsten wire is applied for making heater elements and other heater components in semiconductor and vacuum devices.

### **Gold Plated Tungsten Wire**

Gold plated tungsten wire means tungsten wire coated with a layer of gold. Gold plated tungsten rhenium wire is tungsten rhenium wire with gold plated. Tungsten wire and tungsten rhenium wire with gold plated have similar appearance, but different material content. And the properties of tungsten wire and tungsten rhenium wire are differing from each other.

### **Doped Tungsten Wire**

Doping in blue tungsten oxide or tungsten oxide mixed with trace  $K_2O$ ,  $Al_2O_3$ . And  $SiO_2$ . Doped tungsten wire, performance is better than ordinary tungsten wire, widely used in microwave ovens, television, welding materials, special lighting.

### **Straightened Tungsten Wire**

Straightened tungsten wire is tungsten wire straightened. Straightened tungsten wire includes black straightened tungsten wire, cleaned straightened tungsten wire, and straightened tungsten rhenium wire.

### **Tungsten Filament**

The tungsten filament of a vacuum incandescent lamp is heated to temperatures where visible light is emitted by resistance heating. Tungsten filament acts as an electrical resistor, which dissipates power proportional to the voltage applied, times the current through the filament. When that power level is sufficient to raise the temperature to above 1000 degrees Kelvin, visible light is produced.