

## **Product: WTh10**

Manufacturing: Powder metallurgy (mixing, pressing, sintering), swaging/rolling/drawing, heat treatment and mechanical processing.

Material properties are measured at room temperature on separate test specimens.

### **1. Chemical Composition**

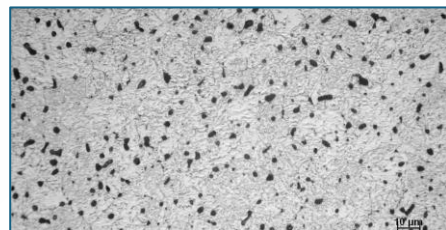
Element	Range (Min. – Max.)	Typical value
Tungsten	98.8 – 99.2 %	99.0 %
ThO <sub>2</sub>	0.8 – 1.2 %	1.0 %

### **2. Physical and Mechanical Properties**

Property	Range (Min. – Max.)	Typical value
Density [g/cm <sup>3</sup> ]	18.3 – 19.1 (depends on diameter)	19.1
Hardness [HV10]	380 – 500 (depends on diameter)	440
Tensile strength [MPa]	1100 – 2500 (depends on diameter)	1600
Fracture Elongation [%]	< 5 (depends on diameter)	2
Electrical conductivity at 300 K [S/m]	18.1 x 10 <sup>6</sup>	18.1 x 10 <sup>6</sup>
Electrical resistance at 300 K [μΩ m]	0.055	0.055
Thermal conductivity at 300 K [W/mK]	173	173
Coeff. of thermal expansion at 300 K [1/K]	4.4 x 10 <sup>-6</sup>	4.4 x 10 <sup>-6</sup>

### **3. Metallography**

The microstructure is characterized by a fine-grained tungsten matrix in which ThO<sub>2</sub> particles are uniformly distributed throughout, as can be clearly seen in the photo. This homogeneous distribution contributes to the material's enhanced properties and performance.



### **4. Applications**

Electrode material for resistance welding, Electrode material for die-sinking EDM, Electrode material in the TIG welding process, Electrode material for lighting technology, Electrode material for plasma spraying and plasma cutting, Emission cathodes for electronic tubes, Heating elements for the furnace construction industry, Wires and sheets for a wide range of electrical applications

### **5. Standards and Certificates**

DIN EN ISO 6848, ASTM F288, ASTM F269 and ASTM B760

Upon request, we are pleased to provide factory certificates in compliance with EN 10204, available as either a 2.2 or 3.1 inspection certificate.

### **6. Delivery program**

Rods, wires, sheets, electrodes, plates, strips and finished parts according to customer drawings.