

## **Product: WRe3**

Manufacturing: Powder metallurgy (mixing, pressing, sintering), hammering/rolling/drawing, heat treatment and machining.

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

### **1. Chemical Composition**

| Element  | Range (Min. – Max.) | Typical value |
|----------|---------------------|---------------|
| Tungsten | 96.8 – 97.2 %       | 97.0 %        |
| Rhenium  | 2.8 – 3.2 %         | 3.0 %         |

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

| Property                                   | Range (Min. – Max.)                  | Typical value          |
|--------------------------------------------|--------------------------------------|------------------------|
| Density [g/cm <sup>3</sup> ]               | 19.2 – 19.29 (depending on diameter) | 19.29                  |
| Hardness [HV10]                            | 380 – 480 (depending on diameter)    | 430                    |
| Tensile strength [MPa]                     | 1300 – 2500 (depending on diameter)  | 1800                   |
| Fracture elongation [%]                    | > 3 (Depends on diameter)            | > 3                    |
| Electrical conductivity at 300 K [S/m]     | 18.0 x 10 <sup>6</sup>               | 18.0 x 10 <sup>6</sup> |
| Electrical resistance at 300 K [μΩ m]      | 0,055                                | 0,055                  |
| Thermal conductivity at 300 K [W/mK]       | 174                                  | 173                    |
| Coeff. of thermal expansion at 300 K [1/K] | 4.5 x 10 <sup>-6</sup>               | 4.5 x 10 <sup>-6</sup> |

### **3. Applications**

Thermocouples for high-temperature systems, electrode material for lighting technology, emission cathodes for electronic tubes, heating elements for the furnace industry, wires and strips for a wide range of chemical and electrical applications

### **4. Standards and Certificates**

ASTM F73 and ASTM E696

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.

### **5. Delivery program**

Rods, wires, pins, strips and finished parts according to customer drawings