Tungsten electrodes.

If a voltage is applied at the anode and cathode then a light-emitting arc is generated. During operation, the tips of the electrodes must withstand temperatures of 1,800 to 3,200 °C. They conduct the emitted heat to the electrode body and the support rods (stems).

Tungsten is the only metal that can meet the high physical and mechanical requirements. Tungsten has the highest melting point of all metals, a low vapor pressure, low thermal expansion, good thermal conductivity and a low electron work function.

Our many materials engineers use our in-house powder metallurgical manufacturing procedures to prepare tungsten optimally for use in cathodes, anodes or support rods (stems). With special alloy additives, we improve the high-temperature dimensional stability, electron work function, formability, machinability and thermal conductivity of the material.
For cathodes, we supply aluminium-potassium silicate (AKS) or lanthanum oxide-doped tungsten. A new addition to the range: WLZ, a tungsten material doped with lanthanum and zirconium oxide. WLZ is the non-radioactive alternative to thorium-doped materials.

Anodes have to withstand extreme thermal loads. Plansee can supply special potassium-doped tungsten materials for this type of application: WVM and WVMW. These materials benefit from a particularly high level of thermal stability and are characterized by excellent arc erosion resistance.

Support rods (stems) are exposed to severe mechanical shocks. Plansee supplies the tungsten material WL-S which is doped with lanthanum oxide. WL-S is exceptionally resistant to breakage even after high-temperature processing.

Our materials for tungsten electrodes at a glance. Naturally, we would be delighted to help you choose the optimum material for your application.

- Cathodes: WLZ, porous tungsten, WL10, WVM
- Anodes: WVM, WVMW, S-WVMW, WVM
- Support rods (stems): WVM, WL-S
A single source for all your needs.

We handle every stage in the manufacture of our products in-house. From the raw materials through to the finished product: including the development of new materials. In this way, we can guarantee that you benefit from the very best quality.