Spark erosion (EDM) techniques can be used to machine even extremely hard materials such as hardened steel, titanium and hard metals. This is a thermal, erosive procedure: Electrical discharges occur between an electrode and the conductive workpiece that is to be machined. The flow of sparks detaches small particles from the workpiece and can be controlled precisely to give it the required geometry and surface.

Our tungsten-based erosion electrodes ensure trouble-free spark-over. And have done so for the last 60 years. We have developed special WCu materials for the spark erosion process – our Sparkal® erosion electrodes. They exhibit low wear, optimum contour sharpness, are easy to work with and achieve a high level of efficiency.

The high quality of our Sparkal® electrodes is assured by a dedicated team of researchers and developers specializing in tungsten-heavy metal alloys. Is excellent just about good enough for you? We continuously optimize our products in close collaboration with our customers. The results are very impressive:
Benefits during the machining of steel and hard metals.

High wear resistance – Due to the high melting point of tungsten (3 420 °C), WCu electrodes have a considerably longer service life than copper or graphite electrodes, in particular in the case of small electrodes which have undergone complex machining. Because the production costs of complex electrodes often far exceed the pure material costs, the use of Sparkal® represents a considerable cost saving due to the extended electrode service life.

Extremely sharp contours – The low wear levels of Sparkal® erosion electrodes make it possible to focus the arc precisely and achieve greater geometrical accuracy in the workpiece than is possible when using Cu or graphite electrodes. You can machine your products to a high level of precision and achieve low machining tolerances.

High surface quality – The use of Sparkal® during the erosion process results in outstanding surface quality and, in particular, eliminates the need for circular electrode movements. This is possible thanks to the fine, uniform grain and freedom from pores offered by Sparkal®.

Very good machinability – The considerably greater modulus of elasticity and increased hardness offered by Sparkal® lead to exceptionally good machinability. Compared to copper, there is practically no material deformation and the level of burr formation is negligible. Unlike graphite, there is no material chipping and the geometrical accuracy of the electrodes is improved. Thanks to these material properties, it is possible to manufacture Sparkal® rods and tubes in extremely small diameters and particularly long lengths.

Improved environmental and working conditions – The machining of graphite requires the use of special extraction systems to remove dust, prevent graphite-smeared floors and keep the air clean. In contrast, the machining of Sparkal® does not require any additional equipment.
Plansee's erosion electrodes are produced using powder metallurgical techniques. From the powder through to the finished product, all the production steps are performed in-house and are subjected to ISO 9001:2000, AS/EN/JISQ 9100 and Plansee's own rigorous quality standards. The key step in the manufacture of Sparkal® erosion electrodes is infiltration. After the porous tungsten blank has been compacted, it is infiltrated with copper, sintered and then machined to produce the geometry required by the customer. The Sparkal® erosion electrodes produced using our WCu composite material provide high wear resistance combined with excellent electrical conductivity.

Plansee supplies a wide range of electrode materials. We are happy to help you choose the Sparkal® material that is right for your application.

**Sure and certain.**

Ever since 1921, our customers have been able to rely on Plansee as an independent private company. Like us, they place great importance on reliability and continuity – especially when it comes to raw materials procurement. With Global Tungsten & Powders (GTP) and a holding in Molibdenos y Metales (Molymet), the Plansee-Group covers all the stages involved in the processing of tungsten and molybdenum – from powder manufacture through the subsequent powder metallurgy processes and on to the production of semifinished products and customer-specific components.