

## DAPOSY Tantalum Coatings

We are now able to offer the service to make coatings of metallic parts with tantalum on demand of parts for various uses. This may be for heavy corrosive environments, for electrodes, for medical purposes or even for jewellery.

### Corrosion resistance of Tantalum

Tantalum metal is a very corrosion resistant material. It is almost completely immune to attack by acids and liquid metals. Only a few chemical reagents like hydrofluoric acid, fuming sulphuric acid (oleum), and strong alkalis have a tendency to weakly attack tantalum.

The reason for the high stability is that tantalum forms an extremely stable oxide layer on its surface, when exposed to oxygen in the atmosphere.

### Our Electrolytic Tantalum Coating Process

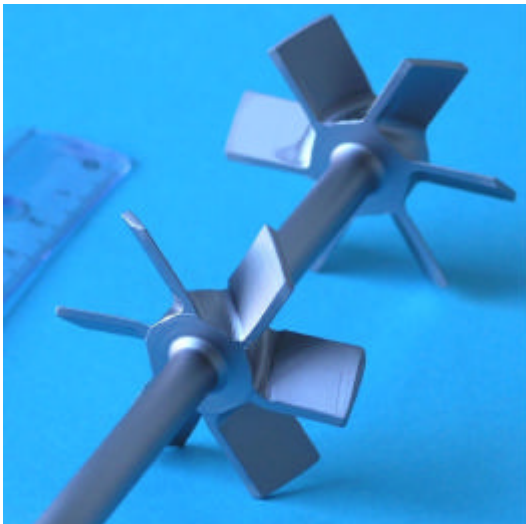
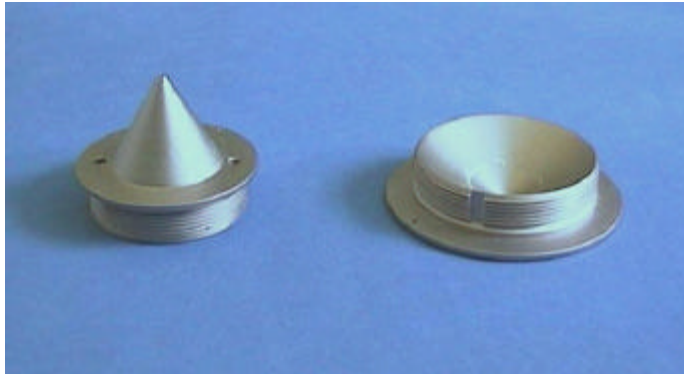
- The coating is made by the use of a molten salt electro-deposition process. The electrolyte consists of a proprietary mixture of fluorides, and is handled under argon atmosphere.
- The Process temperature is above 700°C.
- The standard coating thickness for corrosion protection is 50 µm, however 100 µm or more can easily be applied.

The process has been developed to a level corresponding to the requirements for production of medical devices. The equipment is highly specialised and optimized. We possess state-of-the-art know-how about coatings of tantalum by molten salt electro-deposition. Also niobium can be optimally deposited.

- Base materials like Stainless steel, copper, Hastalloy and other metals can be coated. The only requirement is that the base materials must be electrically conductive and compatible with the process temperature of at least 700°C.
- Parts up to 270 mm in diameter and up to 210 mm in height/length can be treated.
- The maximum weight of individual part to be coated at present is 20 kg.



*A cross section of a tantalum coated stainless steel part seen in a microscope at various magnifications. A very uniform, pinhole free coating is demonstrated. The average thickness of the coating was 22µm.*



*Examples of tantalum coated parts: Nozzle for ICP equipment, a stirrer, and an experimental implant screw with coating only on its tread.*

## **Items of Pure Tantalum**

Items of pure tantalum can be made by coating a template made of e.g. copper, cutting it out and afterwards dissolving the template. As an example we have made rings for eye implan-

tations having the dimensions:

Inner diameter: 6.7 mm

Outer diameter: 7.0 mm

Thickness: 0.2 mm