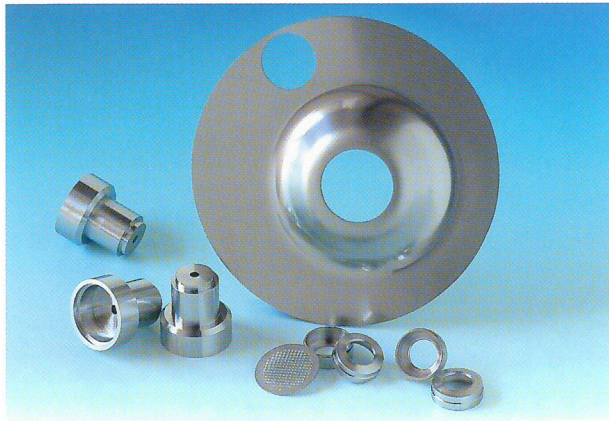


Passivation – Stainless steel and titanium



Various medical parts from passivated titanium.

Thanks to its biocompatibility the *passivation* is perfectly adapted to orthopaedic and other types of implants. Parts are directly implantable or can be further biofunctionalised by bioactive molecules grafting.

Applications

- > Medical: Implants; screws, plates; pumps
- > Electrical engineering: HF connectors frame, cases
- > Spatial: Structural components, electronic cases

The *passivation* is a product from the INNOSURF department, the innovation centre for the Estoppey-Reber group.

The *passivation* is a chemical surface treatment driven by immersion in an oxidising solution following the normalizes QQ-P-35 C or ASTM A 967-01.

The *passivation* process leads to the formation of a regular, stable, dense and of high purity protector oxide film at the surface of the treated part. It ensures two main functions: decontamination and protection against corrosion.

The appropriate pre-treatments, chemical or electrolytic degreasing, preceding the *passivation* allow the elimination of the surface impurities such as grease. The *passivation* itself eliminates oxydable elements in particular iron or copper based alloys originating from earlier processing or storage stages. These elements would cause premature corrosion.

By reaction with chromium or titanium the *passivation* leads to the formation of a fine oxide layer whose thickness ranges from 2 to 6 nm. Although stainless steel and titanium build a native protection oxide layer the *passivation* process implements a surface conditioning, eliminates the impurities and builds a much purer oxide layer than the uncontrolled native one.

The *passivation* process is well adapted to stainless steel as well as titanium and its alloys. It alters neither the parts' dimensions nor the surface morphology.