



# implaPrep Konzept

## Plasma activation of implants

The functionalization of dental implants serves to optimize the wetting behavior. Materials used in medical technology, such as titanium can be effectively optimized in their wetting behavior by plasma pre-treatment. This property is the basis for biocompatibility and acceptance by the surrounding living tissue. By increasing the surface energy the initial attachment of osteoblasts is improved, which subsequently leads to increased new bone formation after implantation. Thus, surface activation with plasma can improve bone regeneration, leading to increased and accelerated osseointegration. This is particularly important in complex cases, immediate loading, or compromised patients.

Activation of the implant surfaces with implaPrep is a supportive procedure that is used by an implant dentist, oral surgeon, or oral and maxillofacial surgeon prior to the insertion of the implants into the jawbone. The material and surface structure specified by the manufacturer is not changed by this process. Surface activation is achieved by an atmospheric dielectric barrier discharge on the implant, which removes microscopic carbon-based adsorbates from the surface, increasing surface energy and improving implant wettability. This enhances the interactions of proteins and cells with the implant surface at a molecular level.

### Fields of application

- Activation and functionalization of titanium implants
- Improvement of wettability

### Possible applications

- ◇ Chairside during implantation as a stand-alone device
- ◇ Integration into existing devices

### Technical data

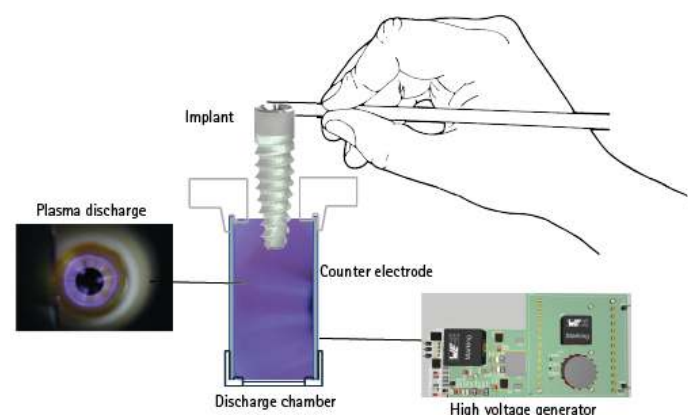
Electrical power: 25 W

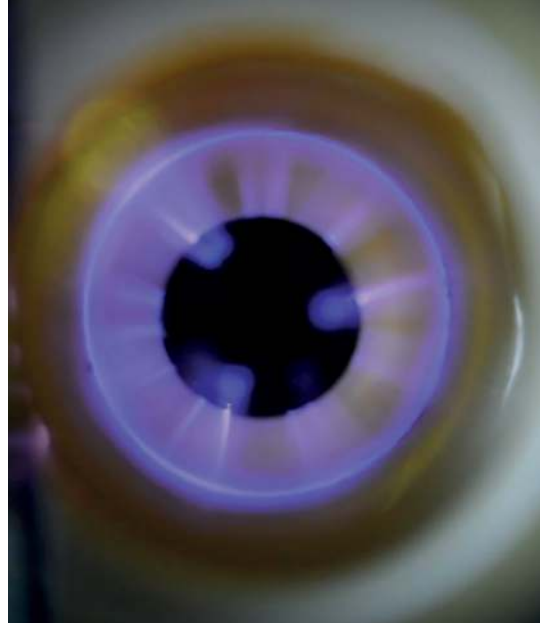
Electrical voltage: 10-30 V, 24V typ.

Typical process time (incl. cooling): 45 s

Typical implant end temperature: 38 °C

Maximum implant temperature: 60 °C





## **impla** Prep Konzept

### Application example implaPrep Konzept

An atmospheric dielectric barrier discharge is ignited onto the surface of dental implants made of titanium, for example. This removes carbon adsorbates, increasing the surface energy and improving the wettability of the surface. The plasma-activated surface promotes initial osteoblast attachment, optimizing osseointegration.

The improved surface property of the implant is achieved without changing the surface roughness (topography) and without changing the material composition (stoichiometry).



The safety of the process is enabled by an electrical contact to the transfer post of the implant, the activation itself takes place via a non-contact discharge in an air gap between the implant and an inert dielectric surface. There is no material exchange with the dielectric counter electrode and likewise the temperature of the implant increases only slightly during the process.

The process time is less than 30s, typically 20s. Even with an overtreatment of 2 minutes, it can be determined that the surface topography has not changed. The process is thus stable and reproducible. In addition, the process is very safe, as it is non-invasive and takes place without direct contact with the patient.



reyon plasma GmbH  
A TDK Group Company  
Osterhofener Straße 6  
93055 Regensburg - Germany

Ph.: +49 941 60098-0  
Fax: +49 941 60098-100  
www.reyon-plasma.com  
info@reyon-plasma.com

**reyon** plasma®  
A TDK GROUP COMPANY