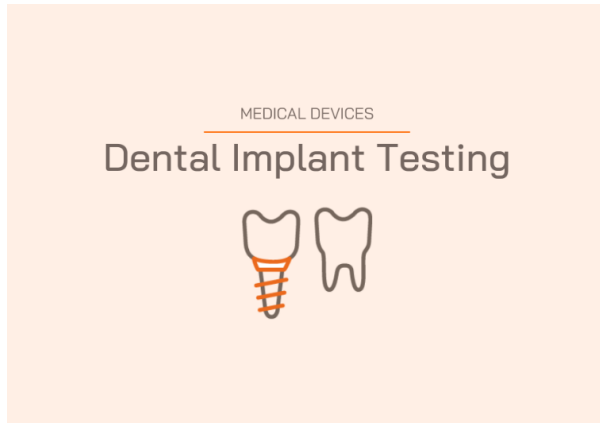


# Dental Implant Testing



## What Is Dental Implant Testing?

**Dental implant testing** involves ensuring that dental implants resemble natural tooth roots to be accepted by the jawline. Dental implants need to be able to **integrate seamlessly** with the surrounding bone and withstand differing **mastication forces**, as well as **varying temperatures** and the **acidity of different foods**.

With our comprehensive [medical device testing](#) services, at [Applus+ Laboratories](#) we can **advise clients on developing their dental implants**, providing focuses of improvement, as well as **offering full simulation testing** to evaluate dental implants for their durability and effectiveness.

## What Dental Implant Testing Services Do We Offer?

At Applus+ Laboratories, we perform **dynamic testing of single-abutment endosseous dental implants** with their prefabricated prosthetic components. This is done so we can validate the mechanical strengths of the designs under simulated functional conditions, ensuring durability and reliability throughout their intended lifespan. These tests are performed against the **international standard ISO 14801**.

### Fatigue and Loading Testing for Dental Implants Against ISO 14801

**Dental implant testing under ISO 14801** simulates the **day-to-day actions of the human mouth** in order to accurately reconstruct how a dental implant would cope under the varying loads that might occur when someone is chewing. It involves a mechanical test aimed at investigating **different materials' geometries** and designs, utilising uniaxial loading:

- **Dental Implant Test Setup:**  
Dental implants are glued into a resin to **fix the implant in a specific position**, making it easy to clamp the resin into the testing machine. The resin is then **slanted at a 30° angle** to simulate the natural orientation of teeth in the human jaw.
- **Loading Scenarios:**  
The dental implant is then subjected to a series of **dynamic load scenarios**. This includes cyclical loads in order to **replicate chewing motions**. Depending on the type of dental implant, we vary the load range in order to test it according to the scenarios it's expected to handle.
- **Fatigue Testing:**  
The dental implant then undergoes a number of **predetermined cycles at different specific loads** to simulate long term use. The cycles continue until the **dental implant fractures** or **passes a number of cycles** without failure. This confirms the implants fatigue life cycle.

## Our Testing Facilities and Equipment for Dental Implant Testing

At Arplus+ Laboratories, we conduct comprehensive testing of dental implants using **advanced equipment** designed to realistically **mimic conditions of actual use**, ensuring compliance with industry standards.

We are equipped with a knee implant simulator featuring **one bench and 3+1 stations**, enabling us to conduct wear tests. Our facility also includes servohydraulic uniaxial test frames for **static, dynamic, and fatigue tests**. This setup allows us to load dental implants for up to **ten million cycles** to assess fatigue, as well as evaluate the implants' responses to different fitting types and varying physiological conditions.

In our state-of-the-art laboratories, dental implants undergo **testing for up to ten million cycles**, positioned at the correct angles of the jaw to **simulate mastication conditions**. This process replicates the effects of a **lifetime of use within weeks**, providing reliable and accelerated results.

## What Are the Benefits of Dental Implant Testing?

Dental implants need to be **durable and robust** for patients to have implanted. Dental implant testing doesn't only **ensure the implant's safety**, but they also help for **quicker market access**.

## Improving Safety and Efficacy for Dental Implants

As implant [materials](#) become **more innovative**, testing them is essential to ensure their **safety and compliance with regulations**. Stringent testing evaluates the materials' effectiveness and safety, promoting innovation and delivering safer products to patients.

## Compliance with International Standards for Dental Implants

Adhering to international standards allows for **broader market access** for your dental implants, facilitating a **quicker development-to-market pipeline** for expansion overseas. Compliance with these globally recognised standards enhances your **credibility in the international marketplace**.

## Why Choose Applus+ Laboratories for Dental Implant Testing?

Opting for Applus+ Laboratories for your dental implant testing aligns you with a **leader in the field of medical device testing**.

We **provide ISO-compliant services** to ensure that your **dental implant products** meet the highest standards of accuracy and reliability. With a broad spectrum of testing capabilities and a **focus on customer satisfaction**, we are perfectly suited to handle all your dental implant testing requirements.

Applus+ Laboratories is committed to being your **one-stop shop for medical device testing**, offering a **comprehensive array of services** designed to reduce your product's time to [market](#). Our services include:

- Virtual testing to support design improvements
- Prototypes manufacturing
- Testing throughout the product life cycle
- Qualification of products and processes, along with batch release testing
- Contract Manufacturing Organisation (CMO) services

Present in various countries, we are equipped to **offer our testing services globally**, ensuring access to **top-notch dental implant testing** in multiple countries.

Choose Applus+ Laboratories as your dependable partner for dental implant testing. We are ready to support your endeavours with our **comprehensive services and expert advice**.