

Metal alternatives: High-performance polymers

The JUVORA dental disc for CAD/CAM manufacture is a high-performance polymer which offers an alternative to metal

The JUVORA dental disc enables prosthetic frameworks, crowns and bridges that pave the way to more patient comfort and are aligned to 21st century technologies and materials. Entirely made from a high-performance polymer, the disc allows efficient manufacturing of reliable non-metal dentures by using CAD/CAM technology to manufacture precise, custom-fit solutions.

The innovative dental disc is based on PEEK-OPTIMA from Invibio Biomaterial Solutions.

PEEK is the abbreviation for polyetheretherketone, a high-performance polymer from the PAEK (polyaryletherketone) family. This implantable polymer has been used clinically for 15 years and in over five million implanted devices across a wide range of medical applications, including spinal fusion, where it has become an industry standard implant material.

Use in dentistry

In recent years this high-performing polymer has become available for use in dentistry as the JUVORA dental disc. Today, it is indicated for the CAD/CAM-based manufacture of implant borne, fixed and removable prosthetics, anterior and posterior crowns as well as posterior and three-unit bridges (maximum one pontic).

The properties of PEEK-OPTIMA help transfer stresses and forces typical in chewing and allow the material to act more like a shock absorber. The flexural modulus of the material (26 times less



than titanium), provides significantly more shock absorption than metals and this may help to address the effects of bruxism/parafunction.

Comfort and fit, two main patient needs, are being successfully addressed by the JUVORA dental disc. 99% of patients rate Juvora prosthetics in the top categories for in mouth comfort (based on 92 patient cases between July 2013 and March 2015).

Digital manufacturing

The manufacturing of the structural framework using CAD/CAM ensures digital accuracy and precise fit and at the same time is making the process more automated, reproducible and also efficient for dental laboratories. In addition, traditional methods such as casting can be avoided.

Melting polymers can cause degradation and changes in crystallinity as they re-solidify, which can adversely affect properties. Through CAD/CAM manufacturing the melting and casting is avoided and as a consequence consistent quality ensured. Mostly without necessary

modification to an existing CAD/CAM infrastructure, laboratories can use the JUVORA dental disc for wet or dry milling. This helps reduce the intensive labour requirements of manufacturing compared to traditional methods including casting, or traditional materials (titanium or chrome cobalt) and means capital expenditure can be lower to bring in-house manufacture of implant bars or removable denture frameworks.

Summary

The JUVORA dental disc from Invibio:

- was specifically developed for digital manufacture through CAD/CAM
- is made of a high-performance polymer called PEEK-OPTIMA, a biomaterial with 15 years of clinical history
- serves as a metal replacement in implant borne, fixed and removable prosthetic frameworks, anterior and posterior crowns as well as three-unit bridges.
- allows efficient and accurate dentures/solutions through CAD/CAM manufacturing
- is available in a variety of disc sizes and shapes to fit most machines
- has flexural modulus bone-like properties
- has excellent shock absorption characteristics, aiding chewing comfort and combating damage due to excessive forces (overload/over stressing)
- relies on an implantable polymer with high strength-to-weight ratio, high resistance to wear/abrasion.

The JUVORA dental disc is available through the Juvora partner network. For more information please visit www.Juvoradental.com/en