

Straumann® PURE
Ceramic Implant

Strong and reliable

Esthetic

Clinically proven

Metal-free

Nowadays, patients are more conscious of their health and esthetics than ever before. Healthy-looking oral soft tissues and bright teeth are considered a prerequisite for a beautiful smile and self-esteem, adding directly to a health-related quality of life (Bennadi and Reddy, 2013; Klages et al., 2004; Pithon et al., 2014). The Straumann® PURE Ceramic Implant is ivory-colored like a natural tooth root and provides a highly esthetic and metal-free alternative to implants made out of titanium.

DID YOU KNOW?

Zirconium ≠ Zircon ≠ Zirconia

- Zirconium is a grayish white metal
- Zircon is a mineral
- Zirconia (Zirconium dioxide, ZrO₂) is a ceramic powder

The Straumann® PURE Ceramic Implant is made out of 100% metal-free yttria-stabilized tetragonal zirconia polycrystal (Y-TZP).

STRONG AND RELIABLE

Ceramic components have been used successfully in orthopedic surgery for over 35 years (Bhandari et al., 2011) and are also used by the aerospace industry for their enhanced toughness and dimensional stability even at high temperatures. However, the stability of ceramic dental implants has long been questioned. To overcome these objections, Straumann® has established an innovative manufacturing process followed by a rigorous 100% proof test where every single Straumann® PURE Ceramic Implant is tested mechanically before leaving the production site. In this test, forces that exceed the maximum human bite capability are applied, and only

implants that pass the test are delivered to the dentist. The outstanding quality becomes evident when comparing the Straumann® PURE Ceramic Implants with other commercially available ceramic implants. The Straumann® PURE Ceramic Implant (Ø 4.1 mm and Ø 3.3 mm) shows significantly higher resistance to forced rupture (Fig. 1). Forced rupture is the most frequent cause of ceramic implant failure. The reliability of the Straumann® PURE Ceramic Implant has been clinically verified in a multi-center study, where no implant fractures were reported during a follow-up period of 24 months (NCT # 02163395).

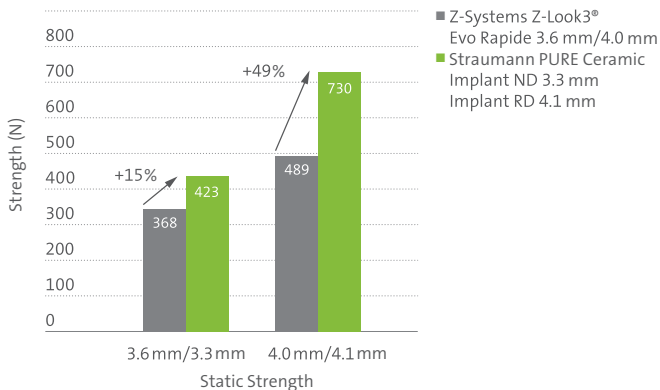


Fig. 1: Static fracture strength tests according to ISO14801 show that Straumann® PURE Ceramic Implants have significantly higher resistance to forced rupture than competitor implants in reduced and regular diameter (data on file).

DID YOU KNOW?

- **STATIC STRENGTH:** is the ultimate fracture resistance of the implant system. The higher the implant's static strength, the lower the risk for rupture when extreme forces applied e.g. biting on a hard nut.
- **FATIGUE STRENGTH:** is the long-term capability of the implant to withstand normal masticatory forces. In addition to the excellent static strength (Fig. 1), the Straumann® PURE Ceramic Implant shows fatigue strength in a test that corresponds over 20 years of implant use (data on file).

ESTHETIC

Most patients perceive treatment to be a success when they are satisfied with their overall dentofacial appearance after treatment. Straumann® PURE Ceramic Implants are ivory-colored, which closely resembles natural tooth roots – an advantage in patients with a thinner mucosal biotype or a high lip line smile (Bidra and Rungruanganunt, 2013; Jung et al., 2008).

Favorable soft tissue formation

Zirconia shows favorable formation of epithelial attachment, as well as indications of lower bacterial accumulation compared to titanium surfaces (Degidi et al., 2006; Institute

Straumann AG, 2014b; Welander et al., 2008). This is an important observation since bacterial adhesion to implant surfaces can lead to bone loss in the tissues surrounding the implants (Lindquist et al., 1996). Studies show minimal gingival recession after placement of zirconia implants (Tete et al., 2009), as well as excellent esthetic outcomes around the implant after one year follow-up (Fig. 2) (Gahlert et al., 2015).

DID YOU KNOW?

Zirconia shows favorable formation of the epithelial attachments compared to titanium surfaces, and low plaque adhesion.



Fig. 2A: In this 29-year-old female patient, a vertical fracture of tooth 9 led to marginal inflammation, which was particularly noticeable due to the high smile line

Fig. 2B: Situation after implant at loading at 1 year. The use of a one-piece Straumann® PURE Ceramic Implant satisfies not only treatment success but also the desire of the patient for a completely metal-free solution in an otherwise caries-free set of teeth.

Fig. 2C: Situation after 3 year.

Courtesy of Dr. Michael Gahlert and Prof. Heinz Kniha.

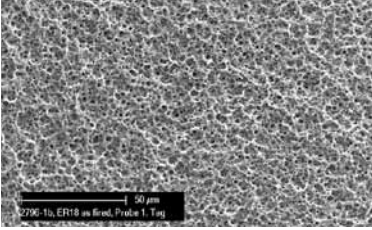
CLINICALLY PROVEN

Surface modifications play an important role in the osseointegration process and thereby influence implant strength as well as aging resistance (Buser et al., 1991; Shalabi et al., 2006). The surface of the Straumann® PURE ceramic implant, Straumann® ZLA®, features a topography characterized by macro- and micro-roughness similar to the proven Straumann® SLA® surface (Fig. 3) (Bormann et al., 2012; Gahlert et al., 2012; Institut Straumann AG, 2011). With over 20 years of experience and more than 100 clinical and preclinical studies, the Straumann SLA® surface is one of the most successful and best clinically documented surfaces in dental implantology, with proven osseointegration properties (Buser et al., 2012; Fischer and Stenberg, 2011; Rocuzzo et al., 2008). In preclinical studies, the ZLA® surface demonstrated similar healing patterns, healing times and osseointegration in terms of peri-implant bone density and bone-to-implant contact (BIC) as seen for the SLA® surface (Gahlert et al., 2012; Gahlert et al., 2010). A recent multicenter clinical trial reported survival and success rates of 97.6% for the Straumann® PURE Ceramic Implant after one year (Gahlert et al., 2015), which is a value within the range of reported one-year survival and success rates for titanium or titanium alloy implants (den Hartog L. et al., 2008).



97.6%
implant survival and
success rate at
12 months

ZLA®



SLA®

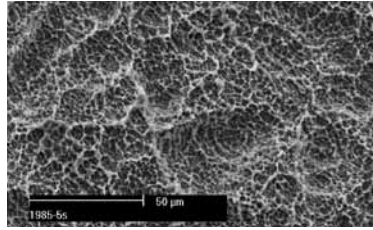


Fig. 3: The ZLA® surface combines the micro- and macro-roughness of the SLA® surface with reliable osseointegrative properties. The torque-out value of the Straumann® PURE Ceramic Implant is equivalent to SLA® implants from titanium. (**Bormann, et al., 2012**)

DID YOU KNOW?

The new Straumann® PURE Ceramic Implant is the result of

- > 9 years of research and development
- with an investment of over 100,000 man hours

METAL-FREE

The prevalence of allergic diseases has increased worldwide in recent years (**Lotvall et al., 2012**), with a growing number of patients suffering from multiple allergies (**Simpson et al., 2008**). Although hypersensitivity to titanium is quite uncommon (**Sicilia et al., 2008**), people can have allergic reactions to metals such as nickel and cobalt (**Thyssen and Menne, 2010**). As a result, health-conscious patients or

patients with susceptibility to allergic reactions may request a metal-free alternative to titanium implants. Straumann® PURE Ceramic Implants are made out of zirconia (yttria-stabilized tetragonal zirconia polycrystal, Y-TZP), which is biocompatible and guaranteed 100% metal-free.

DID YOU KNOW?

A recent patient survey in Germany and Switzerland involving more than 250 participants revealed that:

- Patients would prefer a light-colored ceramic implant over a grayish colored titanium implant, even if it involves higher treatment costs (**Institut Straumann AG, 2014c**).



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