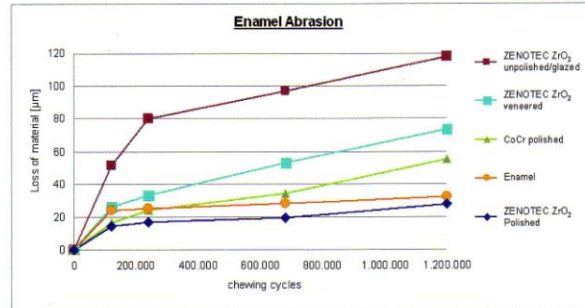


# The ADAM Centre

Your Design & Milling Partner

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## ZENOSTAR - Abrasion (Clinical Study)






„Stawarczyk B & M Özcan (2010 in preparation) Chewing tests for different dental materials, Dental Materials Unit, Universität Zürich.

Polished Zenotec Is Less Abrasive Than ENAMEL!

Design by Dave Dagleish, RDT

Zenostar restorations are designed, milled, stained and finished by of Dave Dagleish, RDT, director of the ADAM Centre.  
If you wish to offer monolithic Zenostar to your dentists why not give Dave a call today?

Zenostar Monolithic - 100% Zirconia

Material	Strength (MPa)
ZENO* Zr*	1300
Lava™***	1100
Alloy Pd-Au	1000
InVision™	900
Procera* Al <sub>2</sub> O <sub>3</sub>	500
e.max****	350

The Zenostar Solution -Anatomic, all ceramic monolithic teeth

A Concept of the future

***“A ZENOSTAR restoration, represents a cost-effective, fast, economical and biocompatible solution for an aesthetic restoration that will satisfy all the wear factor requirements.”***

**Hardness and Abrasiveness?**

ZENOSTAR it is now possible to fabricate full-ceramic crowns and bridges that do not require layering. Non-veneered, monolithic full ceramic crowns and bridges are a reality, but do we all know what a full contour monolithic restoration is? The definition of monolithic is a single crystalline mass component, formed from a single crystal. Looking into the mechanical properties of a Zirconia full contour restoration, we are questioning ourselves how hard is that material and how abrasive is it to the opposing tooth structure?

### **Abrasion of Monolithic Full Contour Solutions**

Well, is it really the hardness that counts or is it the surface texture? Roughness of the material and how it will wear on the opposing tooth structure has to be addressed. We know that glaze wears off between 3-5 years; therefore leaving the raw material exposed to the oral cavity after the glaze wears off, leaving the risk of abrasion to the opposing dentition. The conclusion is that it is not the hardness, which makes a restoration abrasive; it is the quality of the surface. **A polished finish of a monolithic restoration would be far superior than one just being stained and glazed.**

The University of Zurich was commissioned to carry out a study in which the abrasive behaviour of the ZENOSTAR restorations and antagonists would be examined.

### **Abrasiveness Comparison – natural tooth/PFM/layered ZrO<sub>2</sub>**

#### **Polished Zirconia is the LOWEST !**

The abrasion behaviour was compared with the abrasion of the natural tooth, a non-precious crown, and a porcelain veneered zirconium oxide restoration. The test was carried out with 6 of each test specimens, on which a force of 50 Newton was exerted over 1.2 million cycles in an aqueous environment with temperature changes. The 1.2 million cycles stand for a period of wearing of 5 years. This simulation showed that the polished ZENOSTAR crown produced the lowest level of abrasion on the material and also caused the lowest abrasion on the antagonists.

#### **Polishing is Important!**

However, it also showed how important polishing of the material is. The unpolished but glazed ZENOSTAR crown caused the highest level of abrasion on the antagonists. This is the result after the loss of the glaze layer under which the rough, unpolished zirconium oxide appears. In order to be able to apply a glaze layer to smooth polished zirconium oxide, **WIELAND has developed a glaze spray**, which will be available soon for the North American market.

#### **Less Abrasive than e.max!**

According to the study by the University of Zurich, Switzerland and a wear test done by the University of Alabama (wear test published on Jan. 29, 2010), even e-max seems to be more abrasive due to the glass matrix texture and the wearing off of the glaze. Leaving the raw material exposed to the oral cavity after the glaze wears off leaves the risk of abrasion to the opposing dentition. Over the past decade wear has become a major consideration in the ceramic materials we choose, it is not something we can dismiss or overlook when deciding what type of monolithic restoration to offer to our accounts. A ZENOSTAR restoration, WIELAND's brand of a full contour monolithic crown represents a cost-effective, fast, economical and biocompatible solution for an aesthetic restoration that will satisfy all the wear factor requirements.

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