Ceramic framework + veneering ceramic

A **special high-strength ceramic material** is used to manufacture a crown which covers the prepared tooth structure. With **ZENO®** Tec this is a coping made out of zirconium-oxide, a material exceeding certain dental alloys in strength. This coping is then covered- or veneered- with a special type of ceramic like ZIROX®. The dental technician will take the individual oral situation like shade, occlusion and abrasion characteristics into account and create the most esthetic and biocompatible restoration. The materials and skills will make it indistinguishable and perform sometimes even better than natural teeth.

This **veneering ceramic** is especially formulated to be softer than the supporting substructure in order to avoid problems with the opposing natural dentition. Just left on its own the substructure would be too hard and abrasive.

Applications

Aluminum oxide and zirconium oxide ceramic materials have been used for over 20 years, in medicine mainly for hip replacements. These materials are of course fully biocompatible, because the main ingredients are partially the same minerals found in bone-structure.

Actual patient case

Dentistry by Dr. Urs Brodbeck; Zürich, Switzerland

The 10-unit Zirconium-oxide frame (**ZENO®** Zr) during the trial in procedure.

The finally seated 10-unit (**ZENO®** Zr) case, veneered with Zirox porcelain.

Your Dentist
Compliments of your dental laboratory

metal-free
biocompatible
precision made

WIELAND
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Patient information

Teeth made completely out of ceramic

ZENO® Tec System

Zirconium oxide, The material

Zirconium oxide

Zirconium dioxide is a high strength ceramic material, which is, for example, used in aerospace technology. Chemically it is a composition of the rare element Zirconium and oxygen, formulated ZrO_2. Often it is referred to as Zirconium oxide or Zirconoxide.

Color: White – Ivory
Hardness: High

ZENO® Zr

is the trademark for the Zirconium oxide discs for the ZENO® Tec System.

Even patients with allergies or an otherwise weakened immune system will most likely not suffer from any negative reaction related to the **ZENO®** Zr. **ZENO®** Zr does not have any electrical conductivity and therefore no electrical potential, acting as an insulator.

For the same reasons **ZENO®** Zr offers optimized protection against the usually painful irritations inflicted by hot and cold sensations in the mouth. Corrosion is also not possible, therefore gingival reactions like the usual “black gum line” around the PFM-margin will definitely not occur.

CAD/CAM in Dentistry

The newest technology developments are just recently allowing these new hi-tech materials in dentistry. This computer aided mechanized manufacturing procedure is assuring the most consistent and highest quality standards.

■ CAD

CAD stands for **C**omputer **A**ided **D**esign. The individual restoration is designed with the help of the most advanced computer aided technology at a computer.

■ CAM

CAM stands for **C**omputer **A**ided **M**anufacturing. The restoration is manufactured by the most accurate and precise hi-tech milling machine (CNC) as used in the aerospace industry.

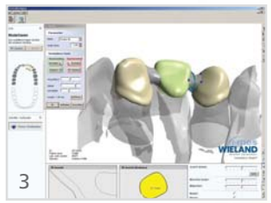
Reliability

Clinical and material science studies confirm the long-term reliability and success of zirconium oxide as a material for even posterior restorations.

■ How are full ceramic restorations, using advanced **ZENO**® Tec Cad/Cam technology, manufactured?

The dentists takes an impression, replicating the situation in the mouth with a model (pic 1).

This very precise model is then placed into a sophisticated laser and camera supported scanner (pic 2), which re-creates a 3-dimensional picture accessible by computer and visible on the screen (pic 3).



The restoration is now designed with the help of the computer, similar to procedures used in the automotive and aerospace industry. With **ZENO**® Tec there are virtually no limitations to that restoration, the technician can design single crowns as well as the most elaborate bridgework.

Once the whole design process is finished, all the data is sent to the **ZENO**® Tec milling machine.

The **ZENO**® Tec milling machine (pic 4) will now use this data to mill the most precise restoration out of a unique and patented Zirconium **ZENO**® Zr disc (pic 5). Finally, these objects are then cut out and sintered in a special high temperature furnace.

Then the crown and bridge substructure is ready to be veneered (pic 6) with a special tooth like ceramic material as ZIROX®.

The technicians will use their craft and skill to create the most natural and esthetic restoration by completing the individual case with different kinds of tooth-imitating ceramic powders (pic 7).

This masterpiece is then fired in a special ceramic furnace, thus developing its tooth like vitality and esthetics.

Finally the dentist can place this state of the art **ZENO**® Tec restoration into the patient's mouth.