VITA ENAMIC® Implant-supported crowns
Working Instructions

VITA shade determination  VITA shade communication  VITA shade reproduction  VITA shade control

Date of issue: 07.15
A new class of materials  4  
Indication and contraindication  5  
Process steps  6  
Geometric requirements  7  
Adhesive bonding on abutments  8
  – Conditioning the VITA ENAMIC crown  8
  – Conditioning zirconia abutments  10
  – Conditioning titanium abutments  12
Recommended products  14  
Safety information  15

Information about VITA ENAMIC hybrid ceramic is available at www.vita-enamic.de
**Product description**

VITA ENAMIC is the first hybrid dental ceramic in the world with a dual-network structure. In this dental material, the dominant ceramic network is reinforced by a polymer network, with both networks fully integrated with one another. VITA ENAMIC is a dental hybrid material that combines the positive characteristics of a ceramic and a composite.
VITA ENAMIC is indicated for single crowns on implant abutments

Requirements for this indication:
- Reliable adhesive bonding between the VITA ENAMIC crown and the abutment:
  - Sufficient geometry (diameter, height, emergence profile) of the abutment[1]*.
- Full compliance with the requirements for all-ceramic restorations [2]*
  - Avoiding sharply defined margins and edges at the abutment.
- Cervical support of the crown on the abutment shoulder just like on a natural
  tooth stump
  - Chamfer or rectangular step with rounded inner angle and a minimum width
    of 0.8 mm

⚠️ Note: The processing instructions for the abutments are general
recommendations given without any obligation. Please contact the manufacturer
of your implant [3]* if you are not sure which implant to use for the respective
indication.

---

<table>
<thead>
<tr>
<th>Overview of indications - VITA ENAMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior and posterior crowns on implant abutments</td>
</tr>
<tr>
<td>Anterior and posterior crowns</td>
</tr>
<tr>
<td>Inlays / Onlays / Partial crowns</td>
</tr>
<tr>
<td>Veneers</td>
</tr>
</tbody>
</table>

Contraindication
- Bridge restorations
- Free-end restorations
- Parafunction (for example bruxism)

* References, see page 15
Process steps - VITA ENAMIC crown on abutment - adhesively bonded

1. Use of a suitable titanium or zirconia implant abutment [1]*

2. Optional customization of the emergence profile and the outer contour of the implant abutment

3. Screwing the abutment in the implant or model analog

4. Scanning the abutment / treatment site or model

5. CAD/CAM fabrication of the VITA ENAMIC crown

6. Bonding the VITA ENAMIC crown to the abutment in situ

*References, see page 15
Geometric requirements for the abutment

⚠️ Note: When preparing the abutment, please observe the general guidelines on the preparation of tooth stumps to support an all-ceramic crown and the information of the respective manufacturers on the use of the abutments.

General requirements:
- The diameter or the size must be adapted to the clinical situation and to the implant system selected.
- The abutment may only be processed if the instructions of the respective manufacturer are observed.
- The geometric requirements for safe static of the crown restoration must be fulfilled:
- Avoid sharply defined margins and edges.
- Vertical convergence angle of the abutment: 3°- 6°.

Geometric requirements for the VITA ENAMIC crown

To ensure clinical success of VITA ENAMIC restorations on implants, the following minimum layer thicknesses must be adhered to:

Anterior crowns
- Incisal wall thickness: at least 1.5 mm
- Circumferential wall thickness: at least 0.8 mm

Posterior crowns
- Fissure area: at least 1.0 mm
- Area of cusps: at least 1.5 mm
- Circumferential wall thickness: 0.8 mm - 1.5 mm
Please note:

- To achieve perfect bonding of VITA ENAMIC crowns on implant abutments, the exclusive use of adhesive bonding is recommended. The use of suitable bonding agents on titanium or zirconia abutments is required to achieve excellent bonding of materials. Special bonding composites or bonding agents are suitable, which contain phosphate monomers and adhesive silanes which form a hydrolysis-resistant chemical bond with titanium or zirconia surfaces.
- Self-adhesive bonding with composites or conventional cementing using zinc phosphate, carboxylate or glass ionomer cements is not recommended.
- Precise and careful preparation of the bonding surfaces is the precondition to achieve durable and reliable adhesion of the VITA ENAMIC crown on the abutment.

Please observe the instructions for use of the manufacturers of the corresponding products!

Conditioning the surfaces

1. Conditioning the VITA ENAMIC crown

Use alcohol to degrease the crown prior to adhesive bonding.

It may be required to cover any polished outer surface in order to avoid accidental etching.
Apply VITA CERAMICS ETCH (hydrofluoric acid gel, 5%) to the surfaces to be bonded.

Etching time: 60 sec.

Completely remove any remaining acid by using water spray or clean in the ultrasonic bath.

Then dry for 20 sec. Do not clean with a brush to avoid the risk of contamination! After drying, the etched surfaces have a white opaque appearance.

Apply silane (e.g. VITASIL, VITA) or a phosphate monomer-containing bonding agent (e.g. CLEARFIL CERAMIC PRIMER, Kuraray) to the etched surface.

Allow silane or bonding agent to react and let it dry completely.
2. Conditioning zirconia abutments

Use wax or silicone to protect or seal the emergence profile and the screw channel of the zirconia abutment. Protect connection geometry with model analog or polishing cap [3]*.

Use high-grade aluminium oxide (Al₂O₃) and carefully sandblast the bonding surface of the zirconia abutment

- Particle size: 110 μm
- Pressure: 1 bar

Then clean in the ultrasonic bath or with alcohol or steam and dry with oil-free air.

The surface to be bonded must not be touched after cleaning to avoid any contamination which may have a negative effect on the adhesive bond.

Application of a phosphate monomer-containing bonding agent, such as CLEARFIL CERAMIC PRIMER (Kuraray) using a disposable brush or microbrush.

Then dry with oil-free air.

⚠️ Note: Please observe the instructions for use of the manufacturers of the corresponding products!

*References, see page 15
Overview of process steps for bonding the VITA ENAMIC crown on a zirconia abutment

<table>
<thead>
<tr>
<th>Process steps</th>
<th>Zirconia abutment</th>
<th>VITA ENAMIC crown</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sandblast with high-grade aluminium oxide (Al₂O₃)</td>
<td>110 μm, max. 1.0 bar</td>
<td>–</td>
</tr>
<tr>
<td>2. Cleaning the surface</td>
<td>Ultrasonic, ethanol</td>
<td>Ethanol</td>
</tr>
<tr>
<td>3. Etching (extraoral)</td>
<td>–</td>
<td>VITA CERAMICS Etch, 5 %, HF, 60 seconds</td>
</tr>
<tr>
<td>4. Cleaning the surface</td>
<td>–</td>
<td>with water spray or in the ultrasonic bath.</td>
</tr>
<tr>
<td>5. Bonding agent / silanization</td>
<td>Apply CLEARFIL CERAMIC PRIMER and dry</td>
<td>Apply CLEARFIL CERAMIC PRIMER or VITASIL and allow to dry</td>
</tr>
<tr>
<td>6. Adhesive bonding</td>
<td>e.g. PANAVIA F2.0</td>
<td>–</td>
</tr>
</tbody>
</table>
3. Conditioning titanium abutments

Use wax or silicone to protect the emergence profile and the screw channel of the titanium abutment. Protect connection geometry with model analog or polishing cap [3]*.

Use high-grade aluminium oxide (Al₂O₃) and carefully sandblast only the bonding surface of the titanium base

- Particle size: 50 μm
- Pressure: 2 bar

until a matt surface is obtained.

Then remove wax or silicone.

Clean titanium base with alcohol or use a steam jet and dry with oil-free air.

*References, see page 15
The surface to be bonded must not be touched after cleaning to avoid any contamination which may have a negative effect on the adhesive bond.

Application of a suitable metal bonding agent, such as ALLOY PRIMER (Kuraray) using a disposable brush or microbrush.

Allow Alloy-Primer to react for 5 s.

Then dry with oil-free air.

⚠️ **Note:** Please observe the instructions for use of the manufacturers of the corresponding products!

---

**Overview of process steps for bonding the VITA ENAMIC crown on a titanium abutment**

<table>
<thead>
<tr>
<th>Process steps</th>
<th>Titanium abutment</th>
<th>VITA ENAMIC crown</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sandblast with high-grade aluminium oxide (Al₂O₃)</td>
<td>50 μm, max 2.0 bar</td>
<td>–</td>
</tr>
<tr>
<td>2. Cleaning the surface</td>
<td>Ultrasonic, ethanol</td>
<td>Ethanol</td>
</tr>
<tr>
<td>3. Etching (extraoral)</td>
<td>–</td>
<td>VITA CERAMICS ETCH, 5 %, HF, 60 seconds</td>
</tr>
<tr>
<td>4. Cleaning the surface</td>
<td>–</td>
<td>with water spray or in the ultrasonic bath.</td>
</tr>
<tr>
<td>5. Conditioning/silanizing</td>
<td>Apply ALLOY PRIMER, allow to react for 5 seconds and dry with air</td>
<td>Apply CLEARFIL CERAMIC PRIMER or VITASIL and allow to dry</td>
</tr>
<tr>
<td>6. Adhesive bonding</td>
<td>e.g. PANAVIA F2.0</td>
<td>–</td>
</tr>
</tbody>
</table>
## Recommended products

<table>
<thead>
<tr>
<th>Product Description</th>
<th>VITA Prod. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ceramic etching gel for VITA ENAMIC</strong></td>
<td></td>
</tr>
<tr>
<td>– VITA CERAMICS ETCH, 5% hydrofluoric acid gel (VITA)</td>
<td></td>
</tr>
<tr>
<td>– Available as a syringe, 3 ml</td>
<td>FCE3</td>
</tr>
<tr>
<td>– Available as dropper bottle, 6 ml</td>
<td>FCE6</td>
</tr>
<tr>
<td><strong>Bonding agent/Primer for VITA ENAMIC</strong></td>
<td>FVS3</td>
</tr>
<tr>
<td>– VITASIL silane bonding agent, syringe of 3 ml (VITA)</td>
<td>–</td>
</tr>
<tr>
<td>– Clearfil Ceramic Primer (Kuraray)</td>
<td>–</td>
</tr>
<tr>
<td>– Scotchbond Universal (3M Espe)</td>
<td>–</td>
</tr>
<tr>
<td><strong>Bonding agent/Primer for zirconia</strong></td>
<td>–</td>
</tr>
<tr>
<td>– Clearfil Ceramic Primer (Kuraray)</td>
<td>–</td>
</tr>
<tr>
<td>– Scotchbond Universal (3M Espe)</td>
<td>–</td>
</tr>
<tr>
<td><strong>Bonding agent/Primer for titanium</strong></td>
<td>–</td>
</tr>
<tr>
<td>– Alloy Primer (Kuraray)</td>
<td></td>
</tr>
<tr>
<td>– Scotchbond Universal (3M Espe)</td>
<td></td>
</tr>
<tr>
<td><strong>Adhesive composites for VITA ENAMIC on titanium/zirconia abutments</strong></td>
<td>FCDCK</td>
</tr>
<tr>
<td>– VITA DUO CEMENT (VITA)</td>
<td>–</td>
</tr>
<tr>
<td>– PANAVIA F 2.0 (Kuraray)</td>
<td>–</td>
</tr>
<tr>
<td>– RelyX Ultimate (3M Espe)</td>
<td>–</td>
</tr>
</tbody>
</table>

---

**Implant-supported crowns - recommended materials**
## The following VITA products require hazard identification:

<table>
<thead>
<tr>
<th>Product</th>
<th>Hazard Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VITASIL®</strong> <em>(Silane bonding agent)</em></td>
<td>Highly flammable&lt;br&gt;Highly flammable liquid and vapor. Store container well sealed at an adequately ventilated place. Keep away from ignition sources. - No smoking. Do not empty into drains. This material and its container must be disposed of as hazardous waste.</td>
</tr>
<tr>
<td><strong>VITA CERAMICS ETCH</strong> <em>(hydrofluoric acid ceramic etching gel)</em></td>
<td><strong>Caustic / Toxic</strong>&lt;br&gt;For extraoral use only!&lt;br&gt;Contains hydrofluoric acid.&lt;br&gt;Toxic if swallowed. Fatal in contact with skin.&lt;br&gt;Causes severe skin burns and damage to eyes. Harmful by inhalation.&lt;br&gt;Wear safety goggles/protective gloves/protective clothing.&lt;br&gt;Keep locked up.&lt;br&gt;If swallowed, call Toxicological Information Center immediately and provide safety data sheet. In case of contact with clothing / skin, remove contaminated clothing immediately and rinse with copious amount of water. Specific measures, see safety data sheet. In case of contact with eyes, rinse with water for a few minutes and consult a doctor/Toxicological Information Center. This material and its container must be disposed of as hazardous waste.</td>
</tr>
<tr>
<td><strong>Protective clothing</strong></td>
<td>While work is in progress, wear suitable safety goggles/face protection, gloves and safety clothing.&lt;br&gt;In case of formation of dust, use an extraction system or wear a face mask.</td>
</tr>
</tbody>
</table>

The respective safety data sheets can be downloaded at www.vita-zahnfabrik.com or requested by fax at (+49) 7761-562-233.

### References:

1. Prefabricated or individual abutments for cemented or adhesively bonded dental restorations. Please contact the manufacturer of your implant to obtain system-related recommendations.
2. "Clinical aspects of all-ceramics", VITA Zahnfabrik, Order No. 1696
3. Please contact the manufacturer of your implant to obtain system-related recommendations.
With the unique VITA SYSTEM 3D-MASTER, all natural tooth shades can be systematically determined and perfectly reproduced.

Please note: Our products must be used in accordance with the instructions for use. We accept no liability for any damage resulting from incorrect handling or usage. The user is furthermore obliged to check the product before use with regard to its suitability for the intended area of application. We cannot accept any liability if the product is used in conjunction with materials and equipment from other manufacturers that are not compatible or not authorized for use with our product. Furthermore, our liability for the accuracy of this information is independent of the legal basis and, in as far as legally permissible, shall always be limited to the value as invoiced of the goods supplied, excluding value-added tax. In particular, as far as legally permissible, we do not assume any liability for loss of earnings, indirect damages, ensuing damages or for third-party claims against the purchaser. Claims for damages based on fault liability (culpa in contrahendo, breach of contract, unlawful acts, etc.) can only be made in the case of intent or gross negligence. The VITA Modulbox is not necessarily a component of the product.

Date of issue of this information: 07.15

After the publication of these information for use any previous versions become obsolete. The current version can be found at www.vita-zahnfabrik.com

VITA Zahnfabrik has been certified in accordance to the Medical Device Directive and the following products bear the CE mark:

VITA ENAMIC®, VITASIL®

PANAIVA® and CLEARFIL® CERAMIC PRIMER are registered trademarks of Kuraray Europe GmbH, Hattersheim, Germany.

3M, ESPE, RelyX® Ultimate, Scotchbond® Universal are registered trademarks of 3M Company or 3M Deutschland GmbH.

We would like to thank BEGO Implant Systems, Bremen, Germany for providing the title image and the graphic at the top of page 7 and for the implant components required for visualization.