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(Clinical Aspects)

B r o c h u r e A

VITA All-Ceramics

Clinical Aspects



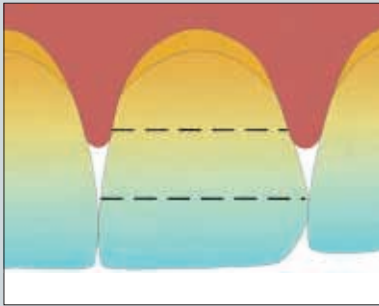
Preparation/cementation

VITA

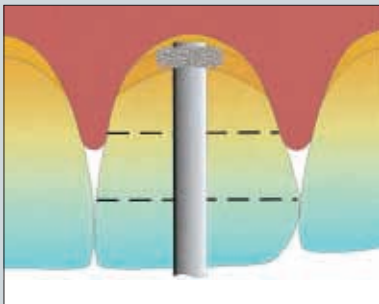
This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Preparation information on restorations with all-ceramic crowns and bridges

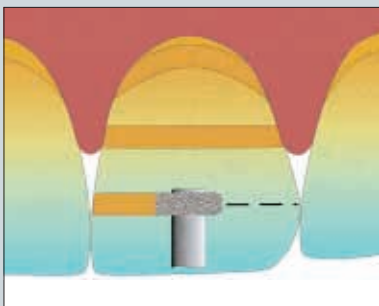
(with the kind assistance of
Prof. Dr. Dr. H. Spiekermann, Aachen, Germany).



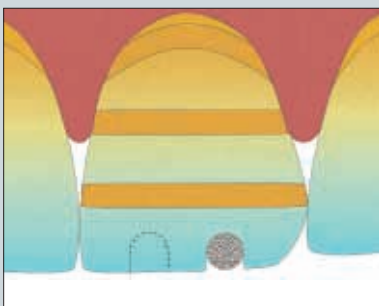
- Theoretical division into three sections of the unprepared labial surface of the tooth crown.



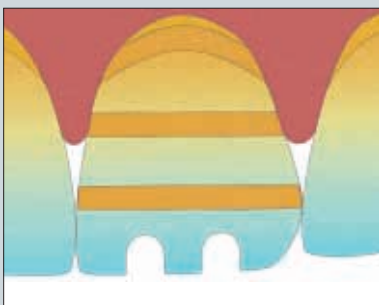
- Preparation of two depth orientation grooves on the labial surface of the tooth with a dual-guided groove cutter.



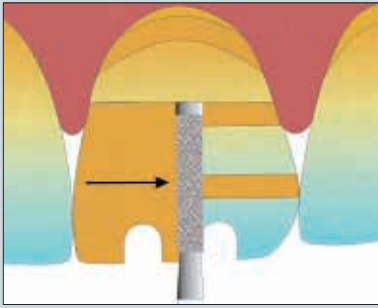
- Preparation of a palatal depth orientation groove.



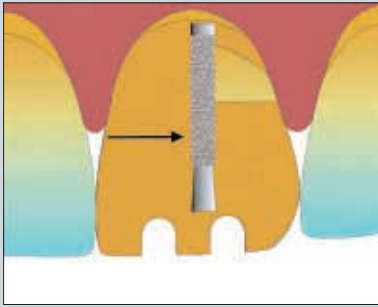
- Preparation of two incisal depth orientation grooves.



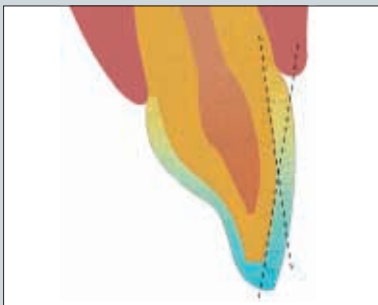
- Condition after milling of all depth orientation grooves.



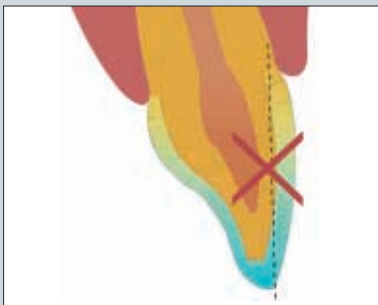
- Reduction of the hard tooth substance parallel to the incisal third of the labial surface between the second and the third milled groove.



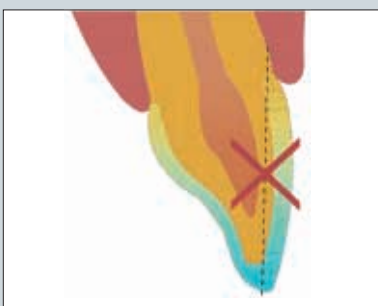
- Reduction of the hard tooth substance in the area of the labial surface between the first and second milled groove and thus almost parallel to the path of insertion.



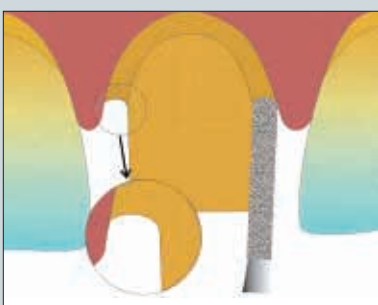
- Correct preparation of the labial surface of the tooth crown in two planes.



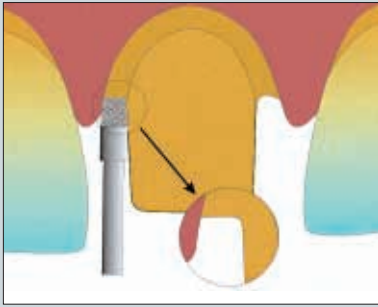
- Incorrect preparation of the labial surface: preparation in one plane, therefore insufficient reduction of substance. Due to that an insufficient wall thickness of the crown and thus a fracture of the crown may be caused.



- Incorrect preparation of the labial surface: risk of damaging the pulp.



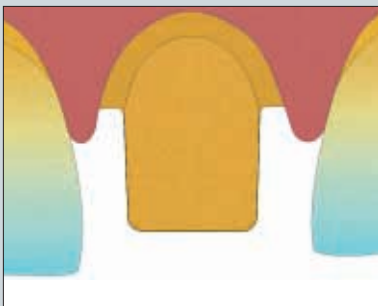
- application area of the approximal cutter.



- Use of the step cutter with depth stop: this cutting tool is used to optimize the position and quality of the prepared step.



- Preparation of the palatal surfaces of the incisal and central third of the tooth.



- Condition after the preparation has almost been completed.



- Smoothing of burrs with sharp edges along the incisal edge using the bud-shaped grinding tool.



- The „Göttinger Präparationssatz 4278“ (set of preparation tools) for all-ceramic crowns allows efficient preparation with defined and reproduceable standards.

Further information available from:

Gebr. Brasseler GmbH & Co. KG · Postfach (P.O.) 160 · 32631 Lemgo/Germany
Telephone (0 52 61) 701 - 0 · Telefax (0 52 61) 701 - 289



- "Meisinger Präparationssatz (set of preparation tools) according to Küpper*" for innovative and conventional crown techniques. The advantage of this set of preparation tools lies in the fact that it allows almost automatic preparation of desired cutting depths in the area of the marginal preparation border.

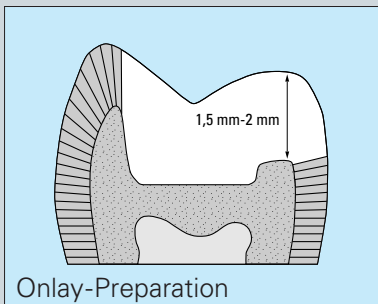
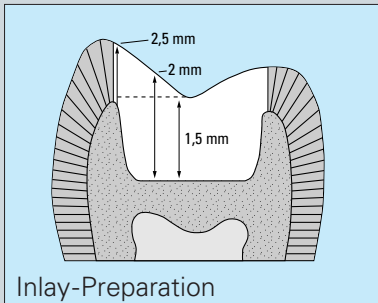
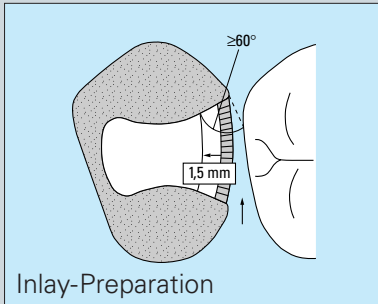
Further information available from:

Hager & Meisinger GmbH · 40018 Düsseldorf 1
Telephone (0211) 30 30 60 · Telefax (0211) 30 30 666

* Clinic for dental prosthetics (Direktor: Universitäts-Prof. Dr. Dr. H. Spiekermann) at the RWTH Aachen/Germany.

Preparation information on restorations with ceramic inlays and onlays made from:

- **VITAPRESS**
- **VITABLOCS® for CELAY®**
- **VITABLOCS® Mark II for CEREC®**



Preparation

During the preparation the particular material-specific properties of dental ceramic materials must be observed.

- A box-shaped preparation without resilient margins is recommended.
- The following applies to inlay restorations:
 - minimum depth at the bottom of the fissure: 1.5 mm
 - minimum depth at the margin of the cavity: 2 mm
 - if the margin of the cavity lies close to the cusp tip: 2.5 mm
 - the cervical step must not have contact with the adjacent tooth
 - minimum width of the approximal step: 1.5 mm
 - angle between lateral wall of the approximal box and approximal surface: $\geq 60^\circ$
- the following must be observed for onlay restorations:
 - minimum layer thickness for cusp preparation: 1.5 mm
- The impression is taken with a precision impression material according to the common rules of dental prosthetics.

Diagrams:

Haller B./ Bischoff, H.: Metallfreie Restaurationen aus Preßkeramik.
Quintessenz Verlag, Berlin 1993

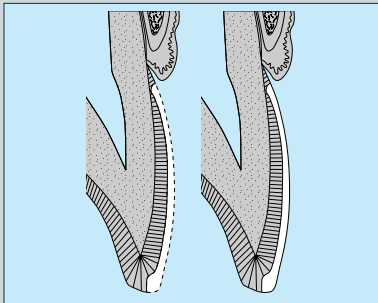
Preparation information on restorations with ceramic veneers made from:

- **VITAPRESS**
- **VITABLOCS® for CELAY®**
- **VITABLOCS® Mark II for CEREC®**
- **VITABLOCS® ESTHETIC LINE for CEREC®**

Preparation

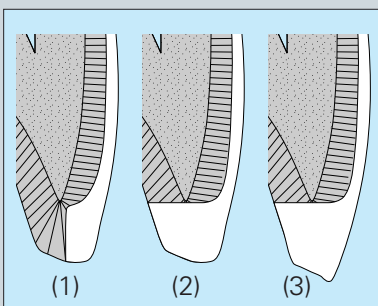
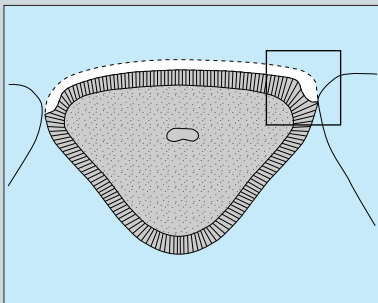
During the preparation the particular material-specific properties of dental ceramic materials must be observed.

- The preparation measures are based on the following objectives:
 - preservation of the vitality of the pulp
 - sufficient removal of hard substance for aesthetic and/or material-specific reasons
 - periodontal-prophylactic aspects



The following applies to veneer restorations:

- **Labial**
 - average labial reduction: 0,5mm
 - progression of vestibular tooth contour is maintained
- **Cervical**
 - slightly rounded shoulder
 - running parallel to the gingiva margin
 - slight extension into the sulcus
- **Approximal**
 - ditching the approximal margins
 - "saddle-shaped" embracing
 - natural contact points should be preserved if possible



- **Incisal**
 - labio-incisal "ditching" (1)
 - minimum reduction of 1 mm while the original length (2) is retained
 - for the "extension", bevel the incisal edge, round off the edge (2+3)

Cementation of VITA In-Ceram® all-ceramic restorations

■ Conventional cementation with zinc phosphate cements

- Indication:
 - For In-Ceram ALUMINA and ZIRCONIA crowns and bridges

Compared with other cements zinc phosphate cements are relatively opaque and have a higher degree of solubility.

■ Conventional cementation with glass ionomer cements

- Indication:
 - For SPINELL, ALUMINA and ZIRCONIA crowns
 - For ALUMINA and ZIRCONIA bridges
 - For patients showing allergic reactions to constituents of adhesive composites
 - In cases where it is not possible to completely dry the area of treatment

Examples of glass ionomer adhesive cements:
Fuji I Capsule Glass Ionomer Luting Cement (GC)
Ketac-Cem Aplicap (Espe)

■ Cementation with glass ionomer-composite cements and compomer adhesive cements

Currently, cementation is not recommended with these types of cement.

Previous studies indicate that these adhesive materials tend to expand after a certain time in situ due to the absorption of moisture (see literature). This can lead to fractures of all-ceramic restorations (In-Ceram and feldspar ceramic). Therefore further studies are required.

■ Adhesive cementation with PANA VIA 21 TC (Kuraray)



- Indication:
 - For all In-Ceram restorations

This chemically setting, modified Bis-GMA luting composite includes an adhesive compomer which forms a durable bond with In-Ceram. PANA VIA 21 TC (tooth color) is particularly translucent and is therefore especially suitable to produce esthetic restorations.

Laboratory procedure

- Sandblast the inner surfaces of the In-Ceram restoration with aluminium oxide (max. 50 µm).
Pressure ≤ 2.5 bar.
- Sandblasted surface must not be touched.
- Silanization is no longer required.

Note: Acid treatment of In-Ceram restorations with hydrofluoric acid is not possible.

Clinical procedure:

- Place a rubber dam to keep the treatment area dry
- Try-in of the In-Ceram restoration
- After contamination with saliva, etc. the sandblasted restoration must be cleaned in organic solvent (e.g. chloroform, acetone, alcohol) in the ultrasonic unit
- Mix and apply PANA VIA 21 TC according to the manufacturer's instructions
- We recommend the use of an enamel/dentine adhesive system to ensure optimum bonding to the tooth substance.

Literature

- Chalermpol, L. et al: In vitro study of fracture incidence and compressive fracture load of all-ceramic crowns cemented with resin-modified glass ionomer and other luting agents. J Prosthet Dent 80, 699-707 (1998).
- CRA Statusbericht: Kompositverstärkte Glasionomerzemente, Frakturen von Vollkeramikkronen. Hrsg: Clinical Research Associates Newsletter, Dt. Ausgabe Jan./Feb. S. 3 (1997).
- Kern, M., Neikes, M.J., Strub J.R.: Haftfestigkeit des Klebeverbundes auf In-Ceram nach unterschiedlicher Oberflächenkonditionierung. Dtsch. Zahnärztl Z 46, 758-761 (1991).
- Kern, M., Thompson, V.P.: Sandblasting and silica coating of a glass-infiltrated alumina ceramic: Volume loss, morphology, and changes in the surface composition. J Prosthet Dent 71, 453-461 (1994).
- Kern, M., Thompson, V.P.: ESCA surface characterization on the alumina ceramic In-Ceram after various conditioning methods for resin bonding. J Dent Res 73, 197, Abstr. No. 763 (1994).
- Kern, M., Thompson, V.P.: Bonding to a glass infiltrated alumina ceramic: Adhesion methods and their durability. J Prosthet Dent 73, 240-249 (1995).
- Neikes, M.J.: Adhäsivtechnik mit dem modifizierten Bis-GMA-Kleber Panavia EX. ZWR 102, 686-870 (1993)

VITA all-ceramic systems - guideline cementation

Material	feldspar ceramics			infiltration ceramics
all ceramic systems	- VITABLOCS® Mark II for CEREC® - VITABLOCS® ESTHETIC LINE for CEREC® - VITABLOCS® for CELAY® - VITADUR® ALPHA - VITAPRESS für VITADUR® ALPHA und VITA OMEGA 900			- VITA In-Ceram® ALUMINA BLANKS for CEREC® - VITA In-Ceram® SPINELL BLANKS for CEREC® - VITA In-Ceram® ZIRCONIA BLANKS for CEREC® - VITA In-Ceram® ALUMINA BLANKS for CELAY® - VITA In-Ceram® SPINELL BLANKS for CELAY® - VITA In-Ceram® ZIRCONIA BLANKS for CELAY® - VITA In-Ceram® ALUMINA BLANKS for DCS® - VITA In-Ceram® ZIRCONIA BLANKS for DCS® - VITA In-Ceram ALUMINA BLANKS for digiDENT® - VITA In-Ceram ZIRCONIA BLANKS for digiDENT® - VITA In-Ceram® ALUMINA - VITA In-Ceram® SPINELL - VITA In-Ceram® ZIRCONIA
Indication	Inlay/Onlay	Veneer	partial crown, crown	crown, bridge
adhesive (luting) material				
zinc phosphate	—	—	—	●
glass ionomer	—	—	—	●
composite	●	●	●	● ¹⁾
compomer, resin reinforced glass ionomer ²⁾	—	—	—	—

● = indicated for adhesion

¹⁾ we recommend especially for In-Ceram crowns/bridges PANAVIA 21 TC or PANAVIA F TC (Kuraray)

²⁾ currently no sufficient scientific results on clinical long-term testing are available



Note:

For the adhesive cementation of **etchable** ceramic restorations made of fine-particle feldspar ceramic (VITABLOCS® Mark II for CEREC®, VITABLOCS® ESTHETIC LINE for CEREC® and VITABLOCS® for CELAY®) as well as VITADUR ALPHA and VITAPRESS, the VITA LUTING SET with working instructions No. 799 E is at your disposal.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

VITA all-ceramics indications

VITA In-Ceram®	○ VITA In-Ceram® SPINELL	○ VITA In-Ceram® SPINELL	● VITA In-Ceram® ALUMINA ● VITA In-Ceram® SPINELL ○ VITA In-Ceram® ZIRCONIA	● VITA In-Ceram® ALUMINA ○ VITA In-Ceram® SPINELL ● VITA In-Ceram® ZIRCONIA	● VITA In-Ceram® ALUMINA ○ VITA In-Ceram® SPINELL ● VITA In-Ceram® ZIRCONIA	● VITA In-Ceram® ALUMINA ○ VITA In-Ceram® SPINELL ● VITA In-Ceram® ZIRCONIA	● VITA In-Ceram® ZIRCONIA
VITA CELAY®	● VITABLOCS® for CELAY®	● VITABLOCS® for CELAY®	● VITA In-Ceram® ALUMINA BLANKS for CELAY® ● VITA In-Ceram® SPINELL BLANKS for CELAY® ○ VITA In-Ceram® ZIRCONIA BLANKS for CELAY® ● VITABLOCS® for CELAY®	● VITA In-Ceram® ALUMINA BLANKS for CELAY® ● VITA In-Ceram® SPINELL BLANKS for CELAY® ○ VITA In-Ceram® ZIRCONIA BLANKS for CELAY® ● VITABLOCS® for CELAY®	● VITA In-Ceram® ALUMINA BLANKS for CELAY® ● VITA In-Ceram® SPINELL BLANKS for CELAY® ○ VITA In-Ceram® ZIRCONIA BLANKS for CELAY® ● VITABLOCS® for CELAY®	● VITA In-Ceram® ALUMINA BLANKS for CELAY® ○ VITA In-Ceram® ZIRCONIA BLANKS for CELAY®	● VITA In-Ceram® ZIRCONIA BLANKS for CELAY®
VITA CEREC®	● VITABLOCS® Mark II for CEREC® ○ VITABLOCS® ESTHETIC LINE for CEREC®	● VITABLOCS® Mark II for CEREC® ○ VITABLOCS® ESTHETIC LINE for CEREC®	● VITA In-Ceram® ALUMINA BLANKS for CEREC® ● VITA In-Ceram® SPINELL BLANKS for CEREC® ○ VITA In-Ceram® ZIRCONIA BLANKS for CEREC® ● VITABLOCS® MARK II for CEREC® ● VITABLOCS® ESTHETIC LINE for CEREC®	● VITA In-Ceram® ALUMINA BLANKS for CEREC® ● VITA In-Ceram® SPINELL BLANKS for CEREC® ○ VITA In-Ceram® ZIRCONIA BLANKS for CEREC® ● VITABLOCS® MARK II for CEREC® ○ VITABLOCS® ESTHETIC LINE for CEREC®	● VITA In-Ceram® ALUMINA BLANKS for CEREC® ● VITA In-Ceram® SPINELL BLANKS for CEREC® ○ VITA In-Ceram® ZIRCONIA BLANKS for CEREC® ● VITABLOCS® MARK II for CEREC® ○ VITABLOCS® ESTHETIC LINE for CEREC®	● VITA In-Ceram® ALUMINA BLANKS for CEREC® ¹⁾ ○ VITA In-Ceram® ZIRCONIA BLANKS for CEREC® ¹⁾	● VITA In-Ceram® ALUMINA BLANKS for CEREC® ¹⁾
VITADUR® ALPHA for Inlays, Onlays, Facings	● VITADUR® ALPHA	● VITADUR® ALPHA		● VITADUR® ALPHA	● VITADUR® ALPHA		
VITAPRESS	● VITA OMEGA 900/IOV ● VITADUR® ALPHA/IOV	● VITA OMEGA 900/IOV ● VITADUR® ALPHA/IOV		● VITA OMEGA 900/IOV ● VITADUR® ALPHA/IOV	● VITA OMEGA 900/IOV ● VITADUR® ALPHA/IOV		

● recommended ○ possible ¹⁾ CEREC® inLab

The product was developed for dental use
and must be processed according to the instructions for use.
The information/illustrations contained herein do not constitute
an assurance of properties and are not binding.

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VITA In-Ceram® BLANKS for CELAY®, VITA In-Ceram® BLANKS for DCS®,
VITA In-Ceram® BLANKS for digiDENT®, VITABLOCS® for CEREC® and
VITABLOCS® for CELAY® are certified
and bear the CE-mark



VITA

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