

New as of:

07.2015

CEREC Blocs C / C PC – for CEREC / inLab

Processing instructions for fine-structured feldspathic ceramic blocks

English

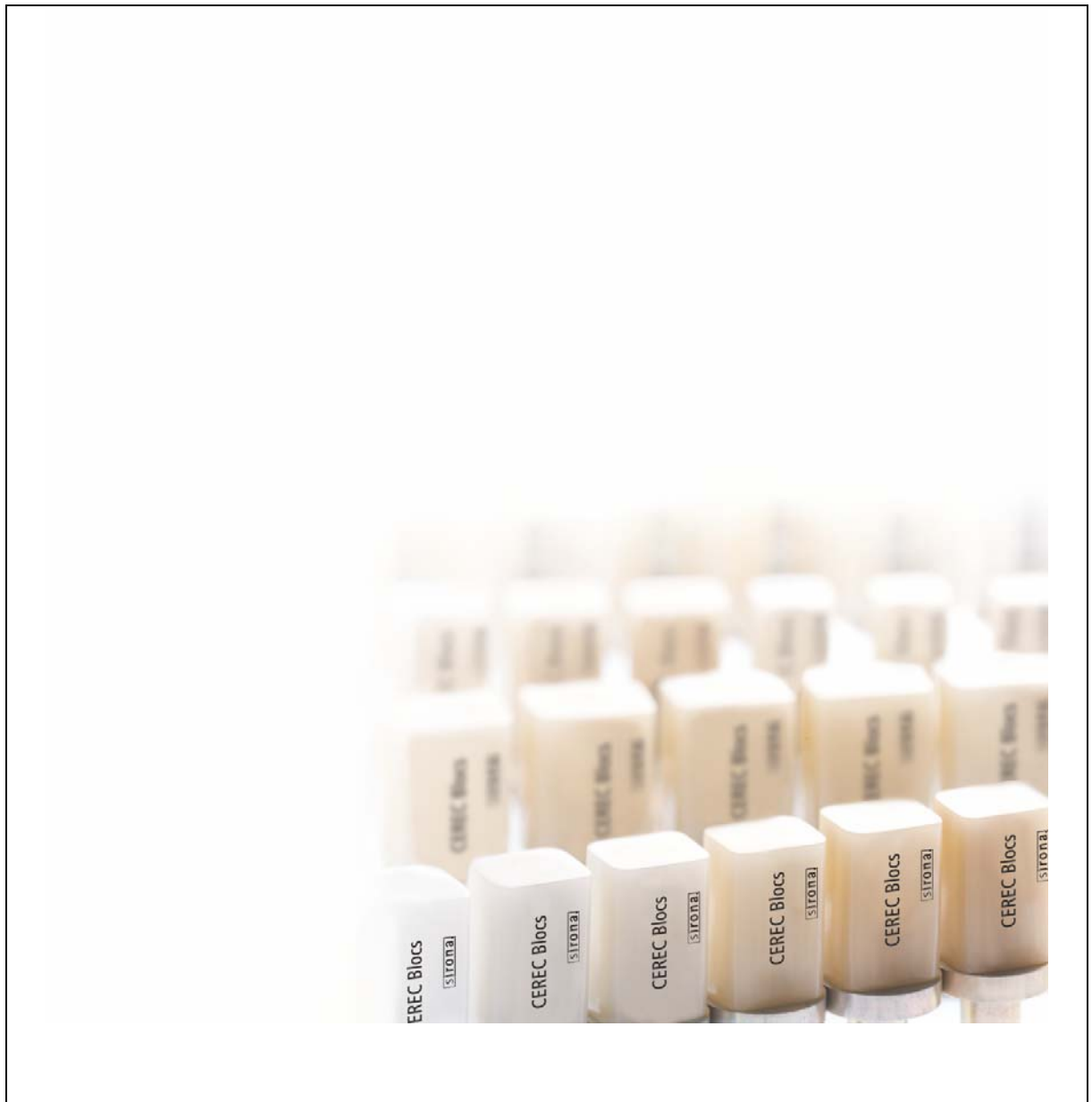


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1 Material

CEREC Blocs C / C PC are industrially manufactured, fine-structured feldspathic ceramic blocks used to produce inlays, onlays, crowns and veneers with CEREC or inLab.

The key advantage of CEREC Blocs C is that restorations can be inserted immediately after the milling operation. Dentists also appreciate the good polishability and outstanding enamel-like abrasion properties of CEREC Blocs C.

The selected composition, the fine microstructure and the industrial sintering process used in producing the ceramic blocks are the chief reasons for the good polishability and outstanding enamel-like abrasion properties of restorations produced from CEREC Blocs C.

CEREC Blocs C are offered in three block sizes (10,12,14) and in 10 Vita Classical colors A1 - D4[®], plus a bleach color. CEREC Blocs C are ideal for use for inlays, onlays, and small partial crowns. Thanks to the high degree of translucence and the resulting "chameleon effect", blocks made from this material adjust to the remaining dentition in an ideal way.

From an aesthetic view, CEREC Blocs C PC are optimized for use in larger partial crowns and in particular for crowns.

The outstandingly millable CEREC Blocs C PC enable dentists to reproduce the color gradients characteristic of natural teeth with respect to both translucence and intensity at the treatment unit, thus achieving improved integration of the restoration into the remaining dentition as well.

The milling tool saving, fine-structured feldspathic ceramics impress users with their antagonist-friendly abrasion properties corresponding to those of natural tooth substance, as well as through optimal light conducting effects and white fluorescence.

A special production process has enabled integration of four different color saturation levels (chroma) into the CEREC Blocs C PC, and thus four different levels of translucence in a single ceramic layer block.

These four layers in a single CEREC Blocs C PC enable a unique naturalness in the restoration: The upper layer of enamel is the least intensive and, at the same time, most translucent layer; the middle dentine layers correspond to the normal level of intensity, while the lower cervical layer has the strongest pigmentation and, similarly to a natural tooth, the least translucence.

Tooth restorations made from CEREC Blocs C PC thus resemble natural teeth without requiring any subsequent surface individualization or characterization. The use of CEREC Blocs C PC also enables enhanced integration of the restoration into the remaining dentition.

The material and processing advantages of CEREC Blocs C/CEREC Blocs C PC feldspathic ceramics have been verified by scientific studies and correlated to the more than 25 million restorations to-date produced with the VITABLOCS fine-structured feldspathic ceramic blocks from VITA in the German town of Bad Säckingen.

The advantages of fine-structure feldspathic ceramics are:

- The material is ideally suited to the CEREC/inLab-CAD/CAM system
- Many years of experience working with the material
- Maximum market acceptance
- Clinical acceptance
- Highly esthetic appearance
- Very good translucence properties
- Chameleon effect
- Antagonist-friendly abrasion properties

2 Chemical composition

| Oxide | % of total weight |
|--------------------------------|-------------------|
| SiO ₂ | 56 - 64 |
| Al ₂ O ₃ | 20 - 23 |
| Na ₂ O | 6 - 9 |
| K ₂ O | 6 - 8 |
| CaO | 0.3 - 0.8 |
| TiO ₂ | 0.0 - 0.1 |
| Pigments | < 0.1 |

The chemical composition values specified above are batch-dependent.

Oxides, contained in very low concentrations and used e.g. for coloring, are not specified here.

3 Technical Data

Physical properties¹

| Properties | Unit | Value |
|---|------------------------|-----------------|
| Coefficient of thermal expansion CTE (20 - 500°C) | 10^{-6}K^{-1} | 8.8 - 10.0 |
| Density | g/cm^3 | 2.44 ± 0.01 |
| Bending strength (Schwickerath) (ISO 6872) | MPa | > 100 |
| Glass transition temperature | °C | 760 - 810 |
| Vickers hardness | GPa | 7.25 ± 1.07 |

CEREC Blocs C and CEREC Blocs C PC are offered in the Vita Classical colors A1 - D4[®], renowned worldwide, as well as a bleach color.

- CEREC Blocs C in 11 colors (A1C-D3C + Bleach 2C)
- CEREC Blocs C PC 4 colors (A1C-A3.5C)

Further concerning available block sizes and colors can be obtained from the two tables below:

Block sizes

The following block sizes are available:

| | Size | Dimensions |
|------------------|-------|-----------------|
| CEREC Blocs C | 10 | 8 x 10 x 15 mm |
| | 12 | 10 x 12 x 15 mm |
| | 14 | 12 x 14 x 18 mm |
| CEREC Blocs C PC | 12 | 10 x 12 x 15 mm |
| | 14 | 12 x 14 x 18 mm |
| | 14/14 | 14 x 14 x 18 mm |

1. The technical and physical values specified here are typical measurement results obtained by the manufacturer using internally available measuring equipment to measure internally produced samples. Different results can be expected when measuring samples produced elsewhere with other measuring instruments.

Block colors

CEREC Blocs C are offered in standard sizes 10, 12 and 14.

Furthermore, CEREC Blocs C PC, polychromatic 4-layer blocks, are available in sizes 12, 14 and 14/14:

| Block size Block color | CEREC Blocs C | | | CEREC Blocs C PC | | |
|---------------------------|---------------|----|----|------------------|----|-------|
| | 10 | 12 | 14 | 12 | 14 | 14/14 |
| Bleach 2C | X | X | X | | | |
| A1C | X | X | X | | | |
| A2C | X | X | X | | | |
| A3C | X | X | X | | | |
| A3,5C | X | X | X | | | |
| A4C | X | X | X | | | |
| B2C | X | X | X | | | |
| B3C | X | X | X | | | |
| C2C | X | X | X | | | |
| C3C | X | X | X | | | |
| D3C | X | X | X | | | |
| A1C-PC | | | | X | X | X |
| A2C-PC | | | | X | X | X |
| A3C-PC | | | | X | X | X |
| A3,5C-PC | | | | X | X | X |

4 Intended use, indications and preparation instructions

4.1 Intended use

The intended use is: CEREC Blocs C and CEREC Blocs C PC are industrially manufactured, fine-structured feldspathic ceramic blocks that are used to produce tooth restorations with the CAD/CAM devices CEREC and inLab from Sirona Dental Systems GmbH.

4.2 Indications

The CEREC Blocs CCEREC Blocs C PC are indicated for production of inlays, onlays, overlays, partial crowns, full crowns, endocrowns on molars, veneers and for facing structures in multilayered systems, if the following additional criteria are ensured:

- Masticatory function,
- all prerequisites for adhesive bonding using a recognized and correctly applied functional enamel-dentine adhesive system (total bonding).

For restorations with a large surface area, additional finishing with stain and glaze firing, such as VITA Akzent Plus, should be implemented for color surface characterization purposes.

| Material Indication | Finely structured – feldspathic ceramics | |
|------------------------|--|------------------|
| | CEREC Blocs C | CEREC Blocs C PC |
| Inlays | ● | ○ |
| Onlays | ● | ● |
| Veneers | ● | ● |
| Partial crowns | ● | ● |
| Anterior tooth crowns | ● | ● |
| Posterior tooth crowns | ● | ● |

○ – possible

● – recommended

CAUTION

Risk of damage to the hard tooth tissue, the pulp and/or oral soft tissue

Dental treatments and supplies with a dental restoration carry the general risk of iatrogenic damage to the hard tooth tissue, the pulp and/or oral soft tissue. Use of fixing systems and supplies with a dental restoration carry the general risk of post-operative hypersensitivities. The product properties cannot be guaranteed if the processing instructions for the products used are not observed. This could result in irreversible damage to the natural hard tooth tissue, pulp and/or oral soft tissue.

4.3 Contraindications

- In the case of hyper functions, excessive mastication or bruxism
- Insufficient oral hygiene
- Insufficient tooth structure
- Insufficient space available

Hyperfunction: Patients diagnosed with excessive mastication, especially "gnashers" and "pressers" are contraindicated for restorations from CEREC Blocs C / C PC. An absolute contraindication applies to the treatment of devital teeth of hyperfunction patients with CEREC Blocs C / C PC restorations.

Endocrown premolars: Endocrowns on premolars are contraindicated due to their small adhesive surfaces and delicate root cross sections.

Bridges: Since CEREC Blocs C are ceramic blocks made of finely structured feldspathic ceramics with a limited strength of 150 MPa, they cannot be used to produce monolithic (monoceramic) bridges.

Fully ceramic frameworks: CEREC Blocs C and CEREC Blocs C PC are not suitable to be used as framework ceramics. For this reason, the ceramics used for this (VITA VM9) and made of this material must not be used as a full veneer of a crown cap.

4.4 General preparation instructions

The preparation can optionally be performed with a chamfer or a shoulder with rounded internal angle. A circular depth of cut of one millimeter should be aimed for. The vertical preparation angle should be at least 3°. All transitions from the axial to the occlusal or incisal areas must be rounded off. Uniform and smooth surfaces are advantageous. A WaxUp and the production of silicone keys to check the preparation are advantageous for diagnosis as well as for clinical implementation (defect-oriented preparation):



Shoulder preparation



Chamfer preparation



Over-contoured chamfer preparation



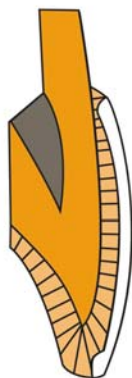
Tangential preparations are contraindicated.

4.5 Preparation of veneers

The ceramic layer thickness of the CEREC Blocs C / C PC veneer should be at least 0,5 mm to enable reliable adhesive bonding:

Labial

- Average labial reduction: 0,5mm
- Progression of vestibular tooth contour maintained

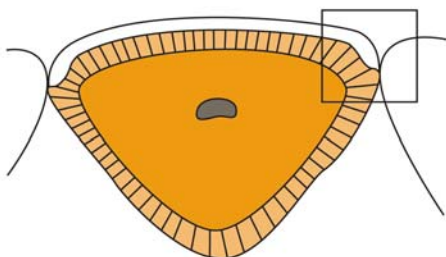


Cervical

- Easily rounded shoulder or chamfer running parallel to the gingival margin, supragingival

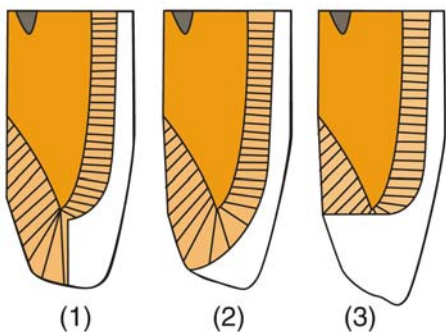
Proximal

- Aim for proximal margins in the sense of a chamfer
- "Saddle-shaped" perimeter
- Natural contact points preserved where possible



Incisal

- Labial-incisal "chamfering" without extension (1)
- A slight reduction allows for a thicker ceramic layer for an individual characterization (2)
- For "extension", flatten incisal edge and round off edge (3)



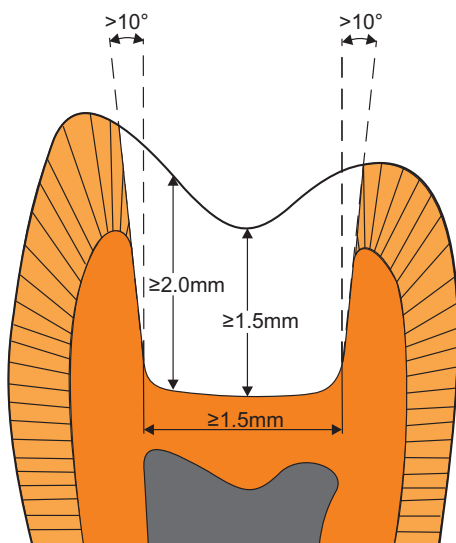
4.6 Preparation of inlays and onlays

The following guidelines apply to the production of inlays and onlays from CEREC Blocs C / C PC finely structured feldspathic ceramics:

- Ceramic strength at bottom of fissure: at least 1.5 mm
- Ceramic thickness in the isthmus area: at least 1.5 mm
- The opening angle must be 10° .
- The cervical step must be detached from the neighboring tooth.

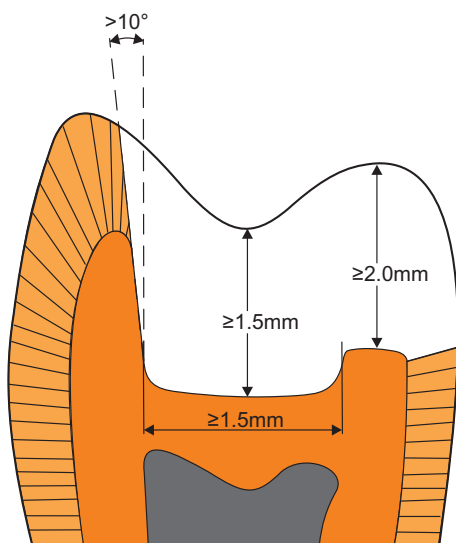
Preparation of inlays

The minimum ceramic thickness of the CEREC Blocs C ceramic under the deepest point of the fissure should be at least 1.5mm. The ceramic width in the isthmus area should be at least 1.5 mm.



Preparation of onlays

In the case of onlay restorations made from CEREC Blocs C, ensure that the minimum thickness of the ceramic in the cusp overcoupling area is at least 2mm.



4.7 Preparation of anterior and posterior tooth crowns

Occlusal ceramic thicknesses for crowns

In the main fissure: While the occlusal margins taper off thin, the minimum thickness of the ceramic material under the lowest point of the fissure is 1.5 mm.

Check the cavity for sufficient dimensions while making the preparation.

The establishment of functional dentine adhesion makes the laying of a subfilling unnecessary and prevents reduction of the ceramic thickness at a specified preparation depth.

The ceramic thickness must be checked in the milling preview of the software.

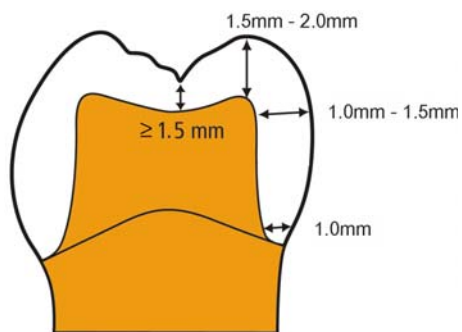
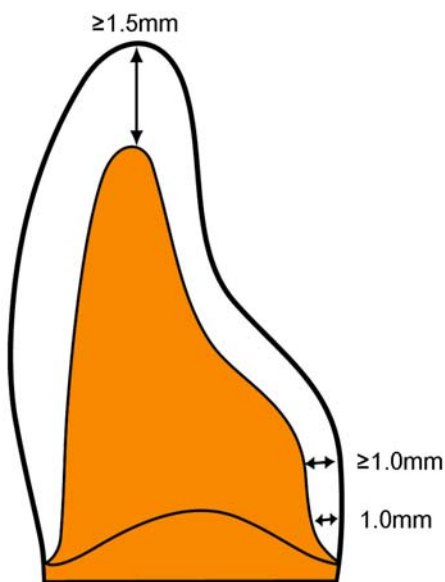
Reduction below the minimum ceramic thickness via manual reworking of the fissure following insertion must be avoided.

To ensure the clinical success of crowns made from CEREC Blocs C / C PC, the following **minimum ceramic thicknesses** must be adhered to:

Preparation of anterior teeth

The incisal wall thickness of the ceramics should be at least 1.5 mm, the circular wall thickness at least 1.0 mm.

The tapering crown edge should be 1,0 mm thick.



Preparation of posterior teeth (premolars and molars)

The ceramic thickness at the deepest point of the main fissure should be at least 1.5 mm

For the cusp design, a ceramic thickness of at least 1.5 - 2 mm should be ensured.

The circular ceramic thickness should be 1.0 - 1.5 mm.

The tapering crown edge should be 1.0 mm thick.

5 Producing a restoration

| Producing a restoration in a dental practice | Producing a restoration in a dental laboratory |
|---|---|
| 1) Following preparation, dry the tooth directly or indirectly and then apply contrast powder or contrast spray depending on the acquisition system used (e.g. CEREC Optispray). In the case of the CEREC Omnicam, no contrast spray is required. | 1) Produce a master model. |
| 2) Take an optical impression with the CEREC Omnicam or CEREC Bluecam. | 2) Create a scan model. |
| 3) Check the quality of the optical impressions. | 3) Scan preparation |
| 4) Initiate a 3D model reconstruction. Check the 3D model for irregularities. | 4) Fasten scan model to scan holder. |
| 5) Design the desired restoration with CEREC software. | 5) Scanning |
| 6) Specify tooth color and incisor enamel thickness. | 6) Design restoration with CEREC/inLab software. |
| 7) Milling/grinding | 7) Specify tooth color and incisor enamel thickness. |
| 8) Fit check | 8) Check restoration data quality. |
| 9) Polishing of proximal areas Alternatively: Customize/enamel | 9) Milling/grinding |
| 10) Adhesive bonding in the mouth | 10) Possible monitoring |
| | 11) Polishing of restoration Alternatively: Individualization/ characterization |

5.1 Scanning, designing and milling

Exact instructions can be found in the corresponding documents, "CEREC software, Operator's Manual" and "inLab Software/inLab CAM Software Operator's Manual".

5.2 Reworking/Polishing

CEREC Blocs C / C PC restorations from finely structured feldspathic ceramics must not under any circumstances be reworked with hard metal instruments, as they could damage the ceramics and cause microcracks; the following therefore applies:

- Reworking of the material should be performed applying minimal force and with ample water cooling.
- Only fine-grain diamond burs (40 µm) should be used for contouring and diamond finishing burs (8 µm) should be used for prepolishing.
- The polishing is best performed with flexible disks coated with Al₂O₃, polishing brushes and diamond polishing paste.

5.3 Characterization/Individualization

In particular for restorations with a large surface area made from Sirona CEREC Blocs C, additional finishing with stain and glaze firing should be implemented for color surface characterization purposes with VITA Akzent Plus. In addition, these finely structured feldspathic ceramic blocks are optimally suited to individualization using VITA VM 9 veneer ceramics.

It is essential that you observe the manufacturer's relevant processing instructions.

5.4 Bonding

The indications for ceramic restorations made from CEREC Blocs C / C PC mentioned above apply solely to adhesive bonding using a recognized and correctly applied functional enamel-dentine adhesive system (total bonding).

Preparing ceramics

Finely structured feldspathic ceramics are inserted with luting composites. These adhesive materials create an adhesive bond between the hard tooth substance and the ceramic restoration which creates a positive bond. The bonding mechanism on the tooth and on the ceramic surface is decisive for clinical success.

Etching

One important prerequisite for bonding is enlargement of the adhesive area. The surface of finely structured feldspathic ceramics can be enlarged by partially dissolving the glass matrix with hydrofluoric acid (e.g. for 60 sec. with approx. 5 % HF) to create a microretentive pattern.

Silanizing

In addition to micromechanical anchoring between ceramics and luting composite, an additional bond can be created via silanization. The silane is applied to the ceramic surface following the etching process. It is important here that the solvent can evaporate completely.

Bonding

In order to improve the moistening of the ceramic surface when using luting composites of higher viscosity, a thin layer of bonding material can be spread over the ceramic surface. This bonding layer is not cured. It polymerizes together with the luting composite.

5.5 Removal of inserted restorations

Diamond instruments must be used to remove full ceramic restorations. Hard metal instruments are not suitable.

Removal of adhesively bonded partial restorations

The problem with these restorations is that it is difficult to discern the borders between the restoration, the luting composite material and the tooth when performing the required wet milling. Since it is not desirable to penetrate further into the tooth substance than is absolutely necessary, it is helpful to intermittently stop milling and blow the tooth dry. The bond to the enamel is usually so good that the entire restoration must be milled out, while those parts that border the dentine automatically come loose.

Recommendation: standard-grain diamond bur (105 - 124 µm) with cylindrical shape.

5.6 Trepination

To create a trephination opening, the coarse grained diamond cylinder must be applied transversely. Once the opening has been milled, the conventional treatment can be resumed.

6 Certification

Sirona CEREC Blocs C/CEREC Blocs C PC are manufactured under the responsibility of VITA Zahnfabrik.

VITA Zahnfabrik is certified according to the Medical Device Directive.

VITA Zahnfabrik
Spitalgasse 3
79713 Bad Säckingen
Germany

CE mark

The CEREC Blocs C/CEREC Blocs C PC products are certified and bear the CE⁰¹²⁴ mark



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We reserve the right to make any alterations which may be required due to technical improvements.

© Sirona Dental Systems GmbH 2015
D 3487.201.11.02.02 07.2015

Sprache: englisch
A.-Nr.: 120 614

Printed in Germany

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