

# VITABLOCS® RealLife® for CEREC®/ inLab® MC XL

## Working Instructions



VITA shade taking

VITA shade communication

VITA shade reproduction

VITA shade control

Date of issue: 10.14

VITA shade, VITA made.

**VITA**

**Contents**

The material and its benefits	3
Technical data	4
Indication and contraindication	5
Processing requirements	5
Shade and block concept	6
Shade taking - tooth	7
Preparation guidelines	8
Ceramic layer thicknesses	9
Shade taking - stump	10
Optical impression	11
Designing the restoration	12-16
Positioning and shade result	14
Influence of the preparation on the shade result	15
Important information for the milling process	16
Fine morphological adjustments	17
Finishing and polishing	18
Shade control	18
Characterization / Individualization of the shade	19
Adhesive bonding	21-24
VITABLOCS RealLife - package sizes	25
Safety information	26



Sirona CEREC AC system



Sirona inLab MC XL system

Information about the CEREC and inLab systems is available from:

**Sirona Dental Systems GmbH**  
Fabrikstraße 31 D-64625 Bensheim

email: [contact@sirona.de](mailto:contact@sirona.de)  
[www.sirona.com](http://www.sirona.com)



### The material and its benefits

- VITABLOCS RealLife are industrially manufactured, fine-structure feldspar ceramic blocks used to fabricate anterior crowns with CEREC and inLab MC XL CAD/CAM systems of Sirona Dental Systems GmbH.
- Since 1990, more than 25 million clinically proven restorations have been fabricated using VITABLOCS.
- VITABLOCS are produced from the proven Mark II ceramic. Thanks to the new spherical structure - in addition to the excellent reflective effects and the white fluorescence of the VITABLOCS Mark II ceramic - various saturation levels (chroma) and hence different translucency degrees can be reproduced with a few block types.
- The layer structure of the VITABLOCS RealLife corresponds to that of natural teeth.



### Geometrical structure of VITABLOCS RealLife:

Spherically curved dentine core with the surrounding enamel coat



### Schematic view of an anterior crown

In the CAD mode, the crown can be moved in all three dimensions to achieve a perfect shade effect as a result of the correct relation of dentine and enamel proportion.

- When combined with modern CAD/CAM technology, the structure of VITABLOCS RealLife copies the optical characteristics of a natural tooth, including translucency and color intensity, with just a few mouse clicks. VITABLOCS RealLife consistently achieve perfect integration of the restoration into the remaining natural dentition without the need to individualize the shade.

**Technical data**

• **Chemical composition\***

Oxides	% by weight
SiO <sub>2</sub>	56 – 64
Al <sub>2</sub> O <sub>3</sub>	20 – 23
Na <sub>2</sub> O	6 – 9
K <sub>2</sub> O	6 – 8
CaO	0.3 – 0.6
TiO <sub>2</sub>	0.0 – 0.1

\* The values of the chemical composition listed above are dependent on the lot. Chemical elements (oxides) that are contained in very low concentrations and required, e.g. for coloring, are not listed.

• **Physical data\***

Property	Unit	Value
Coefficient of thermal expansion CTE (20–500°C)	10 <sup>-6</sup> · K <sup>-1</sup>	9.4 ± 0.1
Density	g/cm <sup>3</sup>	2.44 ± 0.01
Flexural strength (ISO 6872)	MPa	154 ± 15
Modulus of elasticity (resonance method)	GPa	45 ± 0.5
Transformation range	°C	780 - 790





\* The technical/physical values are typical measuring results and refer to internal samples and measurement equipment available on site. If samples are prepared using different methods and measurement equipment, other measuring results may be obtained.

### Indication

VITABLOCS RealLife for CEREC/inLab are indicated especially for the fabrication of highly esthetic anterior restorations if the following criteria are provided:

- Normal function
- All preconditions for adhesive bonding

### Overview of indications

Indication	VITABLOCS RealLife
 Anterior crowns	●
 Veneers	●
 Premolar crowns	○
 Molar crowns	○

● recommended ○ possible

### Contraindication

- If minimum layer thicknesses of the ceramic can not be adhered to. See page 9.

### Hyperfunction

- Restorations made of VITABLOCS are contraindicated for patients diagnosed with excessive occlusal function, in particular those who grind and clench their teeth. The use of VITABLOCS restorations for devitalized teeth of patients with hyperfunctions is absolutely contraindicated.

### Processing requirements for VITABLOCS RealLife

Hardware requirements:

- VITABLOCS RealLife can only be processed with **MC XL milling systems.**

Software requirements:

- Software-version CEREC 3D ≥V3.80 or inLab 3D ≥V3.80

**Intermediate polymerization of the applied stain layer\***

- The shades of VITABLOCS RealLife have been matched with those of VITA SYSTEM 3D-MASTER, which is the only tooth shade system available on the market that takes all 3 color dimensions into account and integrates them into a systematic classification principle for shade determination and shade reproduction:

value - chroma - hue

- Restorations fabricated using VITABLOCS RealLife may have more cervical or incisal proportions in accordance with the natural shade nuances of the residual tooth substance.
- The natural curve between the neck and the incisal edge is found in the block structure of VITABLOCS RealLife. A spherical dentine core is surrounded by a translucent enamel coat:



**Overview of blocks**

- Shades:

<b>Chroma</b> CHROMA 	<b>0M1C</b>	<b>1M1C</b>	<b>2M1C</b>	–
	–	<b>1M2C</b>	<b>2M2C</b>	<b>3M2C</b>

- Size: 14.4 x 14.8 x 18 mm
- Designation: **RL-14/14**



**Initial clinical situation**

Patient, born 1993, tooth 22 with deep fracture



Detail view of tooth 22 with fracture.



**Shade taking - tooth**

Shade taking with the VITA Linearguide 3D-MASTER



Additional control with the VITA Easyshade Advance 4.0 spectrophotometer.



Assessment of the shade using a cross polarization filter. Cross polarization is used to remove the reflections.

**Preparation guidelines**

- The usual preparation guidelines for all-ceramic restorations are applicable. See also the brochure "Clinical Aspects of All-Ceramics", No. 1696.

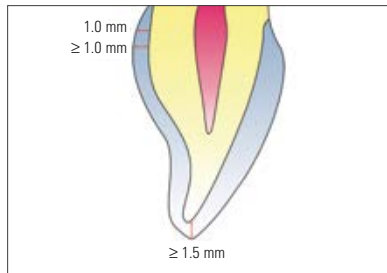


Preparation with fine-grit diamond tools.



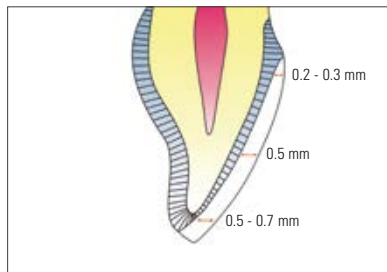
### Ceramic layer thickness

- To ensure the clinical success of crowns fabricated using VITABLOCS, the following **minimum layer thicknesses** must be adhered to:



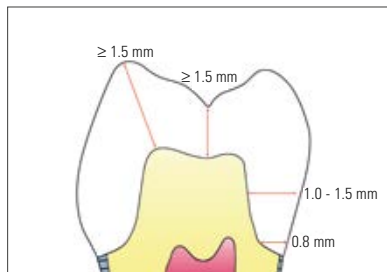
#### Anterior crown

Incisal: **at least 1.5 mm**  
 Circumferential: **at least 1.0 mm**  
 Crown margin: **1 mm**



#### Veneer

Labial: **on average at least 0.5 mm**  
 Incisal third: **0.5 - 0.7 mm**  
 Central third: **0.5 mm**  
 Cervical third: **0.2 - 0.3 mm**



#### Premolar crown

In the area of the cusps: **1.5 - 2 mm**  
 At the deepest point  
 of the main fissure: **at least 1.5 mm**  
 Circumferential: **1.0 - 1.5 mm**  
 Crown margin: **0.8 mm**



### Shade taking - stump

#### VITA SIMULATE Preparation Material

VITA SIMULATE Preparation Material is a light curing composite for the fabrication of artificial dies to simulate the shade of the prepared tooth and hence the oral situation. As the shade of the restoration can be verified in advance and corrected where required, this product makes it easier to reproduce the tooth shade, and to do so with greater reliability.

See Working Instructions, No. 1461.



Determination of the shade of the prepared tooth stump using the VITA SIMULATE Preparation Material Guide.

It may be required to communicate the selected shade to the dental technician.



Fabrication of the die using the VITA SIMULATE Preparation Material. Please observe the information in the Working Instructions No. 1461.



**Application of the retraction cord**

Application of the retraction cord.



Clinical situation prior to the optical impression.



Optical impression

Application of the contrast powder, for example with VITA Powder Scan Spray.



Optical impression with CEREC AC Bluecam or



powder-free optical recording with CEREC AC Omnicam.



### Designing the restoration

- Designing the restoration in this case with the CEREC or inLab 3D  $\geq 4.0x$  software. Please refer to the respective manuals for further details.

⚠ **Important information:** Restorations made of VITABLOCS RealLife can only be fabricated using the MC XL milling systems.



Selecting the VITA RealLife  
**(RL-14/14)** block



Use the various tools of software 4.x for designing individual restorations.

### Information on positioning the restoration with regard to the shade result

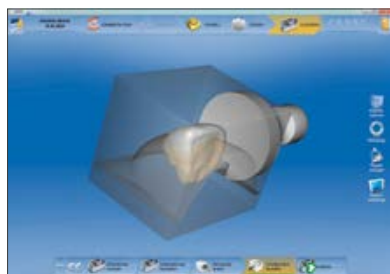
The position of the restoration in the block can be changed with the RealLife software as required to be able to reproduce the individual requirements for the shade effect of the respective clinical situation with regard to translucency, chroma and lightness.

The following specific factors need to be accounted for:

The thinner the labial wall thickness of the crown, the less space is available for the dentine-enamel shade transitions, which means that the options to create smooth shade transitions will be reduced if the wall thickness decreases.

Moreover, the shade of the prepared tooth needs to be considered. These shades can be reproduced with the VITA SIMULATE Preparation Material. See information on page 10.

**Change of the shade effect (chroma and lightness) of VITABLOCS RealLife for different layer thicknesses.**





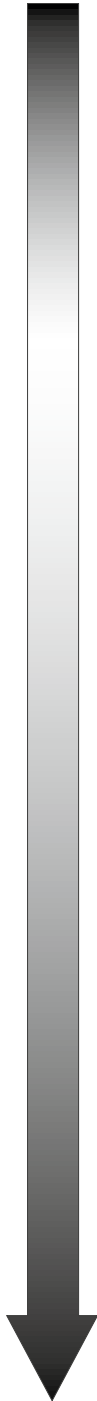






The restoration is placed in the center of the block (relating to all axes) by the software to obtain an **initial position**.

The labial/vestibular side faces the enamel coat of the block.  
75 % of it is covered with enamel.

The initial position can be changed with just a few clicks to achieve the desired shade result.

**Views of the different shade results of a RealLife crown with different positions (enamel coating)**

RealLife block shade 2M2C on VITA Simulate Preparation Material preparation shaded 2M3S

Screenshot -Positioning	Result - Milled crown	Effect on the shade	Chroma
 <p>100 % enamel coverage</p>		<p>Crown with almost non-existent incisal edge and thin enamel coat. No significant shade differences between enamel and dentine. Crown has a high chroma.</p>	
 <p>75 % enamel coverage (initial position)</p>		<p>Crown with natural dentine and enamel areas. Corresponds to the original VITA SYSTEM 3D-MASTER sample tooth 2M2.</p>	
 <p>50 % enamel coverage</p>		<p>Crown appears to have a higher chroma than with 75 % enamel coverage since the dentine core in the body area is more dominant.</p>	
 <p>25 % enamel coverage</p>		<p>Crown with high chromatic shade effect since the enamel proportion in the body area is missing.</p>	



Comparison of the crowns from left to right:

100 %, 75 %, (initial position), 50 and 25 % enamel coverage.



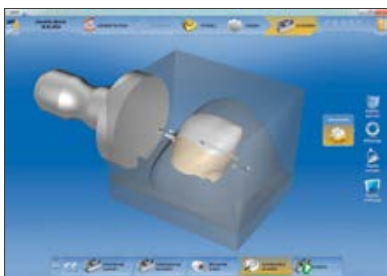
**Influence of the preparation shade on a crown which was made of a VITABLOC RealLife block, shade 2M2C:**

Enamel coverage is approx. 75 %.



The restoration can be moved in all three directions in space using the buttons of the "Position" tool.

The directions of movement always refer to the restoration (not to the axes of the block).



Mesial/distal movement beyond the plane of symmetry of the dentine core.

### Checking the enamel-dentine relation

The transition between the enamel coat and the dentine core should be as smooth as possible to achieve a harmonious and natural shade effect.

#### Rule of thumb:

To reproduce the selected shade in the best possible way, the labial surface of the crown should consist of approx. 75% of enamel or approx. 75% of the dentine core should be covered with enamel.

The relation of the layer thicknesses of enamel/dentine or the course of layers can be accurately checked using the buttons of the Cut tool in combination with the "+/-" button.  
(click once for the cross-section)

**Note:** Use the mouse pointer to position the block directly on the block holder axis to enable approximal cut of the restoration.



The section through the crown shows approx. 75% coverage of the dentine core by enamel.

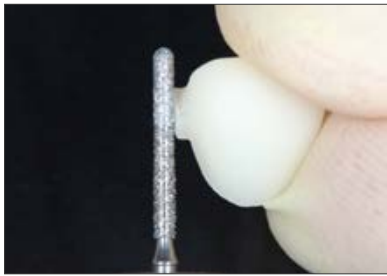
### Important information for the milling process

- When rotating the restoration in the block, it may occur that the block holder is milled, which is not critical.
- Detailed information on the form grinding process can be found in the CEREC or inLab manuals.





Initial crown after milling



Removal of the lug using a fine-grit diamond tool.



Initial crown in situ.

Prior to fitting or cementing, proximal areas are polished outside the mouth, for example with VITA KARAT diamond polishing paste.

### Fine morphological adjustments / Incorporating the texture



Restorations made of VITABLOCS RealLife fine-structure feldspar ceramic must not be reworked using tungsten carbide instruments since such instruments produce microcracks and damage the ceramic. The following must be observed:

- Use only fine-grit diamond abrasive tools (40 µm) for contouring and finishing diamonds (8 µm) for prepolishing.
- When reworking restorations, exert only slight pressure and use sufficient water cooling.



The surface texture is carefully prepared using diamond tools.

⚠ **Note:** In addition to the correct lightness value, the surface design of an anterior crown is essential to achieve an esthetic final result.



### Finishing and polishing

It is recommended to polish with Al<sub>2</sub>O<sub>3</sub>-coated flexible discs, polishing brushes and diamond polishing paste.

Careful polishing is decisive for the overall esthetic and functional appearance of the restoration. A carefully polished ceramic surface reduces plaque accumulation and protects the antagonist tooth against abrasion.



Pay attention to margins and contact points when polishing the restoration. The correct speed must be ensured and generation of heat must be avoided.



### Shade control

After the preparation, the VITA SIMULATE die is used to check whether the shade of the milled VITABLOCS RealLife restoration corresponds to the desired result.

If required, the restoration is milled again in a modified position in the block and/or VITA AKZENT or VITA SHADING PASTE stains are used for surface characterization.

A die is prepared using the selected SIMULATE die material to verify the shade and the shade result of the crown.



Polished crown in situ before shade characterization.



### **Characterization / Individualization of the shade**

In special clinical situations, such as white stains in the enamel caused by decalcification or hyperfluorosis, additional characterization of the shade (staining technique) is recommended for simple and reliable optimization of the esthetic result. VITA AKZENT Plus stains are suitable for this purpose.





If required, individualization with VITA VM 9 (staining technique) can be carried out.

Please observe Working Instructions, No. 1455, VITABLOCS for CEREC/inLab.



After characterization of the shade in situ.

**Overview of firing programs recommended for characterization (staining technique)**

	Predry. °C	 min	 min	 °C/min	approx. Temp. °C	 min	VAC min
Stains fixation firing	400	4.00	4.23	80	850	1.00	–
Glaze firing with VITA AKZENT Plus POWDER and SPRAY	500	4.00	5.37	80	950	1.00	–
VITA AKZENT Plus PASTE	500	6.00	5.37	80	950	1.00	–

**Overview of firing programs recommended for individualization (layering technique)**

	Predry. °C	 min	 min	 °C/min	approx. Temp. °C	 min	VAC min
Stains fixation firing VITA AKZENT Plus	500	4.00	4.23	80	850	1.00	–
First individualization firing with VITA VM 9 *	500	6.00	7.49	55	930	1.00	7.49
Second individualization firing with VITA VM 9 *	500	6.00	7.38	55	920	1.00	7.38
Glaze firing VITA AKZENT Plus	500	4.00	5.15	80	920	1.00	–
Glaze firing VITA AKZENT Plus GLAZE LT powder	500	4.00	3.30	80	780	1.00	–
Glaze firing AKZENT Plus GLAZE LT paste	500	6.00	3.30	80	780	1.00	–
Corrective firing with VITA VM 9 COR	500	4.00	4.40	60	780	1.00	4.40





\* When using Firing Paste, the firing temperature for VITA VM 9 should be increased by 10-20°C.

When using dental ceramics, the firing result largely depends on the individual firing procedure of the user, i.e. among other aspects, the type of furnace, the location of the temperature sensor, the firing tray as well as the size of the object during the firing cycles.

Our application-technical recommendations for the firing temperatures (regardless of whether they have been provided orally, in writing or in the form of practical instructions) are based on extensive experience and tests. The user, however, should consider this information only as a reference.

Should the surface quality or the degree of transparency or glaze not correspond to the firing result that is achieved under optimum conditions, the firing procedure must be adjusted correspondingly. The crucial factors for the firing procedure are not the firing temperature indicated on the furnace display, but the appearance and the surface quality of the firing object after firing.



**Explanation of the firing parameters:**

- Predry. °C      Start temperature
-       Predrying time in minutes, closing time
-       Heating time in minutes
-       Temperature rise rate in degrees Celsius per minute
- Temp. approx. °C      End temperature
-       Holding time for end temperature
- VAC min.      Vacuum holding time in minutes

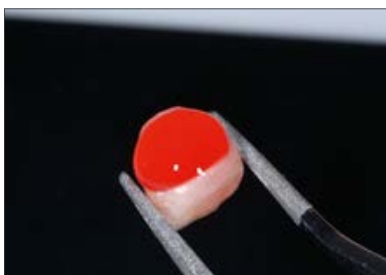


Completed crown made of VITABLOCS RealLife prior to adhesive bonding in situ.

**Adhesive bonding**

Adhesive composite	VITABLOCS RealLife	
	Crown 	Veneer 
Fine hybrid composite with adhesive system: for example, VITA DUO CEMENT with VITA A.R.T. BOND	●	●
Self-adhesive composite: RelyX Unicem	●	—

- Adhesive bonding of crowns should preferably be performed using a more flow-able, dual-curing composite (depending on the thickness of the layering).
- Dual-curing composite cements should not be used for thin veneers since these materials may cause a slight change in color (yellow shade) after curing. Therefore a light-curing composite should be preferred. A microbrush glued to the veneer using light-curing bonding material or an adhesive stick can be used as holders. Fixing the veneer with a finger allows more uniform distribution of pressure during adhesive placement.



**Preconditioning the crown**

Etch with hydrofluoric acid gel (e.g. VITA CERAMICS ETCH).

Etching time: 60 sec.



Completely remove any remaining acid by using water spray (60 sec).



Apply silane (for example VITASIL) to the etched surfaces.  
Allow to evaporate completely.

Agitate primer coat of adhesive (for example VITA A.R.T. BOND Bonder), blow off.  
Do not light cure!

### **Preconditioning the tooth**



Application of the adhesive system, such as VITA A.R.T. BOND.



Application of the adhesive composite, such as VITA DUO CEMENT.



Crown in situ with excess cement.



Precuring the adhesive composite for a short time.



Removal of excess adhesive composite.



Final curing. Please observe the respective instructions of the manufacturers of the cements/composites.



Completed crown immediately after adhesive bonding in situ.

Block shade used: 2M2C



Lip image of completed crown.






The happy patient after restoring tooth 22 with a crown made of VITABLOCS RealLife, shade 2M2C.






**Package sizes - VITABLOCS RealLife for CEREC / inLab**

VITABLOCS RealLife for CEREC / inLab				
Shade	Designation	Size	Contents	Prod. No.
<b>0 M1C</b>	RL-14/14	14 x 14 x 18 mm	5 pieces	EC40M1CRW1414
<b>1 M1C</b>	RL-14/14	14 x 14 x 18 mm	5 pieces	EC41M1CRW1414
<b>1 M2C</b>	RL-14/14	14 x 14 x 18 mm	5 pieces	EC41M2CRW1414
<b>2 M1C</b>	RL-14/14	14 x 14 x 18 mm	5 pieces	EC42M1CRW1414
<b>2 M2C</b>	RL-14/14	14 x 14 x 18 mm	5 pieces	EC42M2CRW1414
<b>3 M2C</b>	RL-14/14	14 x 14 x 18 mm	5 pieces	EC43M2CRW1414

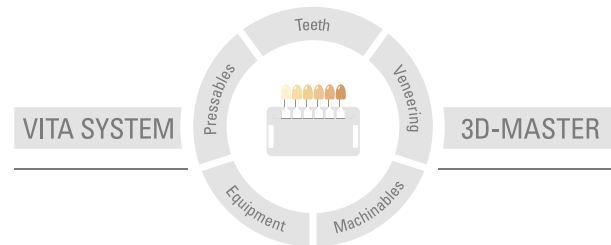
The following products require hazard identification:		
<p><b>VITA CERAMICS ETCH</b> (hydrofluoric acid ceramic etching gel)</p>	<p><b>Caustic / Toxic</b></p> <p>For indirect use only! Contains hydrofluoric acid. Toxic if swallowed. Fatal in contact with skin. Causes severe skin burns and damage to eyes. Harmful by inhalation. Wear protective gloves/protective clothing/safety goggles. Keep locked up. 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.</p>	
<p><b>VITA ETCHANT GEL</b> (Phosphoric acid etching gel)</p>	<p><b>Caustic</b></p> <p>Causes severe skin burns and damage to eyes. Contains phosphoric acid. When working with the product, do not eat and drink. Do not inhale gas/fume/vapor/aerosol. In case of contact with eyes, rinse thoroughly with water and consult a doctor. When working with the product, wear suitable safety goggles / face protection, protective gloves, and protective clothing. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). This material and its container must be disposed of as hazardous waste.</p>	
<p><b>VITASIL</b> (Silane bonding agent)</p>	<p><b>Highly flammable</b></p> <p>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.</p>	

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

<b>Safety clothing</b>	When working with the product, wear suitable safety goggles / face protection, gloves and safety clothing. In case of formation of dust, use an extraction system or wear a face mask.	
------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

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

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: 10.14

After the publication of these information for use any previous versions become obsolete. The current version can be found at [www.vita-zahnfabrik.com](http://www.vita-zahnfabrik.com)

VITA Zahnfabrik has been certified in accordance to the Medical Device Directive and the following products bear the CE mark **CE** 0124 :

#### VITABLOCS® RealLife®

CEREC® and inLab® are registered trademarks of Sirona Dental Systems GmbH, Wals, Austria.

RelyX® Unicem is a registered trademark of 3M Company or 3M Deutschland GmbH.

**We would like to thank Dr. Alessandro Devigus, Bülach, Switzerland and Mr. Giordano Lombardi (dental technician), Dübendorf, Switzerland for their support and for providing clinical and technical photos.**

# VITA

VITA Zahnfabrik H. Rauter GmbH & Co. KG  
Spitalgasse 3 · D-79713 Bad Säckingen · Germany  
Tel. +49 (0) 7761 / 562-0 · Fax +49 (0) 7761 / 562-299  
Hotline: Tel. +49 (0) 7761 / 562-222 · Fax +49 (0) 7761 / 562-446  
[www.vita-zahnfabrik.com](http://www.vita-zahnfabrik.com) · [info@vita-zahnfabrik.com](mailto:info@vita-zahnfabrik.com)  
[facebook.com/vita.zahnfabrik](https://www.facebook.com/vita.zahnfabrik)

