VITABLOCS®

Working Instructions



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

Date of issue: 11.16

VITA shade, VITA made.

Fine-structure feldspar ceramic blocks
for the fabrication of inlays, onlays,
veneers and crowns

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VITABLOCS are industrially manufactured, fine-structure feldspar ceramic blocks used to fabricate inlays, onlays, veneers and crowns with various CAD/CAM systems. Compared to other machinable silicate ceramics available on the market, they excel in their unique combination of feldspar materials and a fine-particle structure, which lead to high resistance to chipping, protection of the natural tooth substance against abrasion and excellent polishing properties.

Since 1990, more than 25 million clinically proven restorations have been fabricated using VITABLOCS - the world's first fine-structure dental ceramic. Survival rates of 97% for crowns after 5 years, 95.5% after 9 years and 84.4% after 18 years for inlays correspond to the gold standard (see list of references, page 51). This can also be attributed to the excellent adhesive bond between ceramic and tooth substance, which is achieved thanks to the excellent etching properties of the VITABLOCS.

VITABLOCS TriLuxe have been available in different shade intensity levels since 2003; the advanced VITABLOCS TriLuxe forte variation has been available since 2007. VITABLOCS RealLife were introduced in 2010.

VITABLOCS TriLuxe, TriLuxe forte and RealLife are produced from the proven Mark II ceramic. Through a special production procedure, various color saturation levels (chroma) and various translucency levels could be combined in one block in addition to the excellent reflective effects and the white fluorescence of the Mark II ceramic. As a result, they differ significantly from the monochromatic VITABLOCS Mark II. They allow the characteristic color gradients present in natural dentition to be replicated both in terms of translucency and intensity, facilitating enhanced integration of the restoration into the residual tooth substance or residual dentition. This effect is particularly strong in the VITABLOCS RealLife for highly esthetic anterior restorations. Due to the spherical curved dentine core, which is surrounded by an enamel coat, the layer structure is almost identical to that of natural anterior teeth.

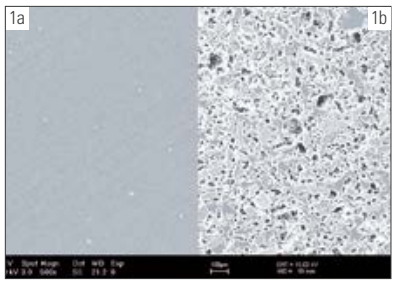


Fig. 1: SEM picture of the VITABLOCS surface (magnification 1000 x), to the left: polished, to the right: etched for 60 seconds. The uniform and highly retentive etching pattern caused by homogeneous distribution of the crystal and glass phase can be recognized.

VITABLOCS consist of natural feldspar materials such as potassium feldspar (orthoclase) and albite. The advantages of natural feldspar materials - compared to other ceramic materials - are the high purity and the large temperature range during melting. The average particle size of the raw materials used is approx. 4 µm. As a result, the microstructure of the sintered VITABLOCS exhibits very fine crystalline portions (not entirely molten albite, among others), which are very homogeneously embedded in the surrounding glass matrix. The crystalline portion is less than 20 % by weight. This fine structure (see Fig. 1) combined with the industrial sintering process are the reasons for the good polishing results and outstanding abrasion properties similar to those of natural tooth enamel offered by restorations made from VITABLOCS Mark II. The fine structure ensures that antagonist teeth are not exposed to harmful "sandpaper" effects.

In most clinical situations, the high translucency of the VITABLOCS ensures excellent matching of the shade with the residual teeth so that additional characterization of the shade is not required.

VITABLOCS easily fulfill the requirements for good machinability, which becomes evident during the CAM milling process, which reduces tool wear, and during reworking by the dentist during which changes of the shape or adjustments can easily and accurately be carried out in situ with diamond milling instruments.

Technical

- No thermal refinement processes, such as stains, glaze or crystallization firing required

- Simple optional characterization and individualization of the shade can be carried out that saves time and money since

– characterization (with glaze material and stains) or individualization (with ceramic materials) are carried out with the products available in the VITA product range and special products or a special firing tray are not required.
– washbake is not required for individualization with VITA VM 9
– the firing stability of the base material is very high

- Excellent machinability as developed especially for CAD/CAM technology

The results are:
– high edge stability
– long service life of diamond milling tools during the CAM process

- Unsurpassed material homogeneity thanks to the industrial sintering process and fine-particle structure.

Clinical

- Outstanding clinical results for more than 25 years

- With 4 different types of shade composition / block for any clinical situation, excellent final results in terms of esthetics as well as a clearly structured range of block shades

- Very good translucency characteristics, distinctive chameleon effect

- Outstanding abrasion properties compatible with antagonist dentition

- Excellent polishing results

- Superior adhesive bonding thanks to outstanding etchability

Chemical composition*

Oxides	SiO_2	Al_2O_3	Na_2O	K_2O	CaO	TiO_2
% by weight	56–64	20–23	6–9	6–8	0.3–0.6	0.0–0.1

Chemical elements (oxides) that are contained in very low concentrations and required, e.g. for coloring, are not listed.

* The values of the chemical composition listed above are dependent on the lot.

Physical data*

Properties	Unit of measure	Value
CTE (25–500°C)	10^{-6} K^{-1}	9.4 ± 0.1*
Density	g/cm^3	2.44 ± 0.01*
Flexural strength (Schwickerath) (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 are indicated for the fabrication of inlays, onlays, partial crowns, full crowns, molar endo-crowns as well as veneers, provided the following additional criteria are met:

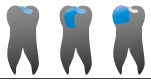
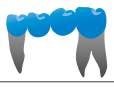
- Normal function
- All preconditions for adhesive bonding using a proven and properly-used functional enamel-dentine adhesive system (total bonding).

Additional finishing with a VITA AKZENT Plus glaze or stain firing should be carried out for large restorations and for individualizing the shade of the surface. See p. 31 ff.

⚠ Note:

Dental treatment and the integration of dental restorations entail the general risk of iatrogenic damage to hard tooth substance, pulp and/or oral soft tissue. The use of bonding systems and the integration of dental restorations entail the general risk of postoperative hypersensitivity. In the event of non-compliance with the processing instructions of the products in use, the product characteristics can not be ensured so that product failure and irreversible damage to the natural hard tooth substance, pulp and/or oral soft tissue may result.

Overview of indications of fine-structure feldspar ceramic:

Indication / Type of material	VITABLOCS Mark II	VITABLOCS TriLuxe/TriLuxe forte	VITABLOCS RealLife
 Inlay	●	○	○
 Onlay	●	○	○
 Table top	●	○	○
 Veneer	○	●	●
 Endo-crown*	○	○	○
 Anterior crown	○	●	●
 Posterior crown	○	○	○
 Veneer structure for the VITA Rapid Layer Technology	●	●	—

● recommended ○ possible * molars only

Contraindication

General

- in cases of inadequate oral hygiene
- inadequate results of preparation
- insufficient hard tooth substance
- insufficient space available

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.

Endo-crowns - premolars

- Due to the small adhesive surface and the small root diameters, endo-crowns for premolars are contraindicated.

Bridges

- Since VITABLOCS consist of a fine-structure feldspar ceramic with a limited strength of approx. 150 MPa, this material is not suitable for the fabrication of monolithic (mono-ceramic) bridges.

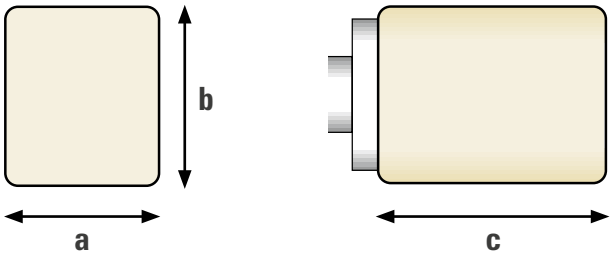
> ⚠ **Note:** Within the scope of the VITA Rapid Layer Technology, VITABLOCS are exclusively used for mechanical fabrication of the veneer structure of bridges with up to four units based on zirconia substructures.
> Please adhere to the information provided in the Working Instructions, No. 1740.

All-ceramic substructures

- VITABLOCS are not suitable for the fabrication of all-ceramic substructures. Accordingly, VITA VM 9 must not be used for individualizing and for full veneers of copings made from these materials (see information on page 30).

Fine-structure feldspar ceramic												
Designation	Size in mm (a x b x c)	Content of pack	Shades									
VITABLOCS® Mark II / VITA SYSTEM 3D-MASTER®												
I8	8 x 8 x 15	5	–	1M1C	1M2C	2M1C	2M2C	2M3C	3M1C	3M2C	3M3C	4M2C
I10	8 x 10 x 15	5	–	1M1C	1M2C	2M1C	2M2C	2M3C	3M1C	3M2C	3M3C	4M2C
I12	10 x 12 x 15	5	0M1C	1M1C	1M2C	2M1C	2M2C	2M3C	3M1C	3M2C	3M3C	4M2C
I14	12 x 14 x 18	5	0M1C	1M1C	1M2C	2M1C	2M2C	2M3C	3M1C	3M2C	3M3C	4M2C
I-40/19*	15.5 x 19 x 39	2	–	1M1C	1M2C	–	2M2C	–	–	3M2C	–	–
VITABLOCS® TriLuxe / VITA SYSTEM 3D-MASTER®												
TRI-12	10 x 12 x 15	10	–	–	1M2C	–	2M2C	–	–	3M2C	–	–
TRI-14	12 x 14 x 18	5	–	–	1M2C	–	2M2C	–	–	3M2C	–	–
TRI-14/14	14 x 14 x 18	5	–	–	1M2C	–	2M2C	–	–	3M2C	–	–
VITABLOCS® TriLuxe forte / VITA SYSTEM 3D-MASTER®												
TF-12	10 x 12 x 15	5	–	–	1M2C	–	2M2C	–	–	2M2C	–	–
TF-14	12 x 14 x 18	5	–	–	1M2C	–	2M2C	–	–	3M2C	–	–
TF-14/14	14 x 14 x 18	5	–	–	1M2C	–	2M2C	–	–	3M2C	–	–
TF-40/19*	15.5 x 19 x 39	2	–	–	1M2C	–	2M2C	–	–	3M2C	–	–
VITABLOCS® RealLife / VITA SYSTEM 3D-MASTER®												
RL-14/14	14 x 14 x 18	5	0M1C	1M1C	1M2C	2M1C	2M2C	–	–	3M2C	–	–
VITABLOCS® Mark II / VITA classical A1–D4®												
I8	8 x 8 x 15	5	A1C	A2C	A3C	–	–	–	–	–	–	–
I10	8 x 10 x 15	5	A1C	A2C	A3C	A3,5C	A4C	B2C	B3C	C2C	C3C	D3C
I12	10 x 12 x 15	5	A1C	A2C	A3C	A3,5C	A4C	B2C	B3C	C2C	C3C	D3C
I14	12 x 14 x 18	5	A1C	A2C	A3C	A3,5C	A4C	B2C	B3C	C2C	C3C	D3C
VITABLOCS® TriLuxe / VITA classical A1–D4®												
TRI-12	10 x 12 x 15	10	A1C	A2C	A3C	–	–	–	–	–	–	–
TRI-14	12 x 14 x 18	5	A1C	A2C	A3C	–	–	–	–	–	–	–
VITABLOCS® TriLuxe forte / VITA classical A1–D4®												
TF-12	10 x 12 x 15	5	A1C	A2C	A3C	A3,5C	–	–	–	–	–	–
TF-14	12 x 14 x 18	5	A1C	A2C	A3C	A3,5C	–	–	–	–	–	–
TF-14/14	14 x 14 x 8	5	A1C	A2C	A3C	A3,5C	–	–	–	–	–	–

* for the Rapid Layer Technology.



VITABLOCS® Mark II in 10 VITA SYSTEM 3D-MASTER® shades

0M1C	1M1C	1M2C	2M1C	2M2C	2M3C	3M1C	3M2C	3M3C	4M2C

VITABLOCS® Mark II in 10 VITA classical A1–D4® shades

A1C	A2C	A3C	A3,5C	A4C	B2C	B3C	C2C	C3C	D3C

VITABLOCS® TriLuxe in 3 VITA SYSTEM 3D-MASTER® shades

1M2C	2M2C	3M2C

VITABLOCS® TriLuxe in 3 VITA classical A1–D4® shades

A1C	A2C	A3C

VITABLOCS® TriLuxe forte in 3 VITA SYSTEM 3D-MASTER® shades

1M2C	2M2C	3M2C

VITABLOCS® TriLuxe forte in 3 VITA classical A1–D4® shades

A1C	A2C	A3C	A3,5C

VITABLOCS® RealLife in 6 VITA SYSTEM 3D-MASTER® shades

0M1C	1M1C	1M2C	2M1C	2M2C	3M2C

	Dental practice	Dental laboratory	VITA products	
	Shade determination - tooth	—	VITA Easyshade V VITA Toothguide 3D-MASTER VITABLOCS Guide 3D-MASTER VITA Linearguide 3D-MASTER	
	Preparation optional Shade taking - stump	—	VITA SIMULATE Preparation Material (page 18)	
	Taking an impression	Fabricating the model	—	
	—	CAD/CAM process	VITABLOCS Mark II VITABLOCS TriLuxe VITABLOCS TriLuxe forte VITABLOCS RealLife	
	—	Finishing, checking on the model	—	

	Dental practice	Dental laboratory	VITA products	
	—	Option: shade characterization Individualizing/glazing	VITA AKZENT Plus stains/glaze material VITA VM 9 ESTHETIC KIT VITA FIRING PASTE VITA SIMULATE Preparation Material (pages 21-38)	
	Adhesive bonding Ceramic etching Silanization Enamel/dentine etching adhesive system Adhesive composite Oxygen protection gel	—	VITA LUTING SET with: VITA CERAMICS ETCH VITASIL VITA ETCHANT GEL VITA A.R.T. BOND VITA DUO CEMENT VITA OXY-PREVENT (pages 40-42)	
	Fitting fine morphological adjustments Occlusion and articulation final polishing	—	VITA KARAT diamond polishing paste extraoral (page 50)	



Proper shade taking is the key to a restoration with a natural and esthetic appearance. The tooth shade of the non-prepared tooth or the adjacent teeth is determined after tooth cleaning.

Note that the final shade result is determined primarily by the shade of the prepared tooth stump and the VITABLOCS shade.



The special VITABLOCS Guide 3D-MASTER is particularly suitable for shade determination and selecting the respective VITABLOCS block. The shade samples of the VITABLOCS Guide 3D-MASTER are monochromatic and built up from the original Mark II ceramic without any characterization of the shade.



If VITABLOCS TriLuxe, TriLuxe forte or RealLife are used for the fabrication of the restoration, the VITABLOCS Guide should preferably be used for selecting the correct shade since the basic shade printed on the blocks corresponds to the shade of the respective shade tab.

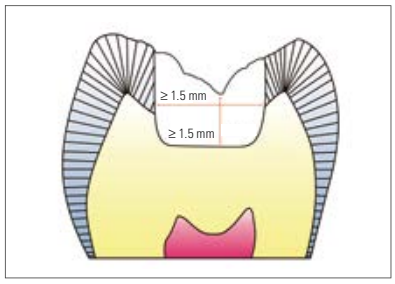


The "Block mode" of VITA Easyshade V enables digital determination of the block shade to be selected.

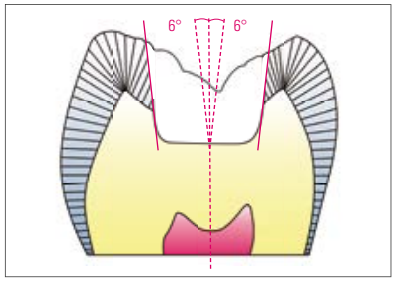
⚠ **Note**: For additional information on the preparation of all-ceramic restorations, please also read our detailed brochure "Clinical Aspects of All-Ceramics" No. 1696.

Inlays

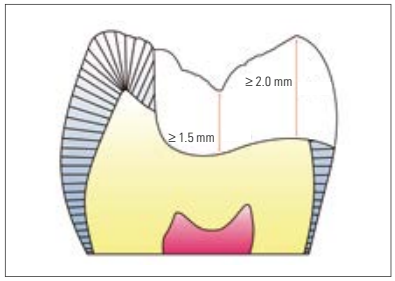
Ceramic layer thickness below the lowest point of the fissure: at least 1.5 mm. Thickness of ceramic in the area of the isthmus: at least 1.5 mm. Box-shaped preparation without resilient margins is recommended.
Round cavity segments, in particular at the bottom of the cavity, should be prepared and sharp edges must be avoided.



Ceramic layer thickness
Occlusal: **at least 1.5 mm**
Area of the isthmus: **at least 1.5 mm**

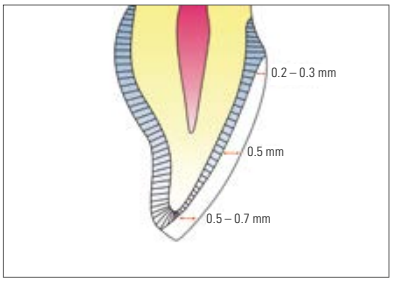


Opening angle >10°



Onlays

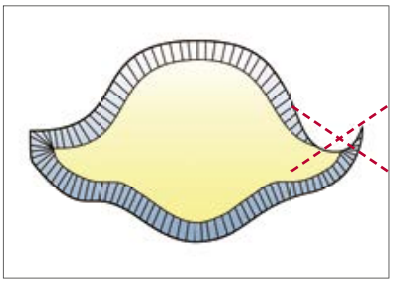
Ceramic layer thickness
Occlusal: **at least 1.5 mm**
Area of cusps: **at least 2.0 mm**



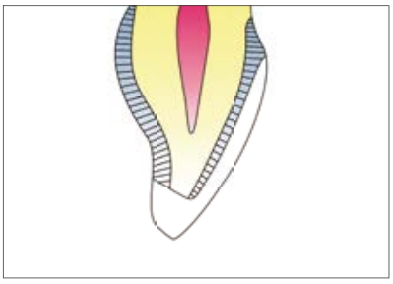
Veneers

Ceramic layer thickness

Incisal:	**0.5 - 0.7 mm**
Labial:	**0.5 mm**
Cervical:	**0.2 - 0.3 mm**

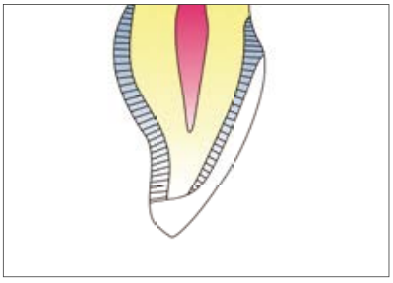


Gutter-shaped preparations should be avoided

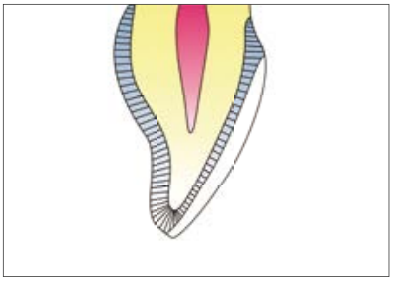


Types of incisal veneer preparation

Incisal reduction with bevelling in the palatal direction (incisal path of insertion)



Incisally reduced, but labially inclined preparation margin (buccal path of insertion)



The preparation border should taper towards the incisal edge if at least 1.5 mm of tooth substance remains

Crowns

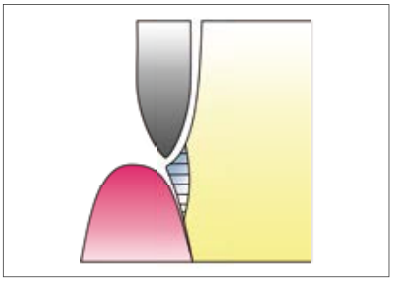
A chamfer or shoulder with rounded inner angle should be prepared in the case of all-ceramic crowns. The goal should be a circumferential cutting depth of one millimeter. The vertical preparation angle should be at least 3°. All transitions from the axial to the occlusal or incisal surfaces should be rounded. Homogeneous, smooth surfaces are recommended. A wax-up and the fabrication of silicone keys to control the preparation are helpful for the diagnosis and the clinical application (defect-oriented preparation).

Location of the preparation border

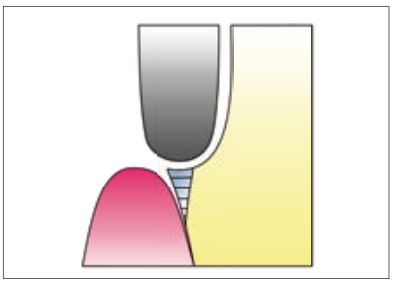
In light of periodontal-physiological considerations a subgingival preparation border should be prepared if possible.

If esthetic aspects are more important, a preparation border located in the paramarginal area may be required.

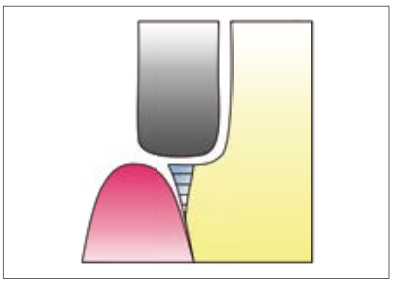
A subgingival preparation border should generally be avoided.



Chamfer preparation



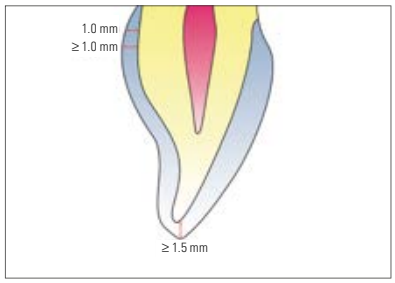
Accentuated chamfer preparation



Shoulder preparation or step with rounded inner edge

Ceramic layer thickness for crowns

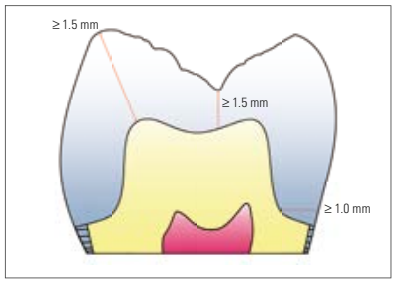
To ensure the clinical success of crowns fabricated using VITABLOCS, the following values for ceramic layer thickness must be observed:



Anterior crowns

Ceramic layer thickness

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



Posterior crowns

Ceramic layer thickness

Area of the cusps:	**1.5 mm - 2.0 mm**
Occlusal:	**at least 1.5 mm**
Circumferential:	**at least 1.0 mm**
Crown margin:	**1.0 mm**



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 the oral situation. As the shade of the restoration can be verified in advance and corrected where required, this product enables dental technicians or dentists to reproduce the tooth shade, and to do so with greater reliability.



Determination of the shade of the prepared tooth stump using the VITA SIMULATE Preparation Material Guide. (shade table, see page 51)

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

The acrylic die is prepared in the following way:



Use a brush to apply VITA SIMULATE Insulation Liquid without puddle formation in a thin, homogeneous layer to the interior of the ceramic crown or veneer.



Fill the interior of the ceramic restoration with VITA SIMULATE Preparation Material and condense the material using a modeling instrument in order to avoid cavity formation.

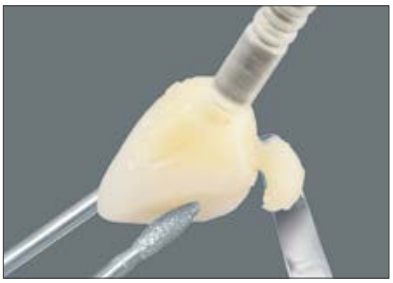


Press the application stick into the uncured die material and ensure that the tip of the application stick is positioned at the center of the restoration and does not touch the sides.



Fill the remaining cavities and adapt the material firmly around the application stick.

Close the syringe immediately after use!



Then remove excess die material from the margins using a modeling instrument.



Cure the die material using a light-curing unit or a hand-held curing light for at least 90 seconds depending on the unit (see table). Please follow manufacturer's instructions (see working instructions, no. 1461).



Remove the cured VITA SIMULATE die from the restoration and clean the restoration in the ultrasonic unit. Then use the VITA SIMULATE die to check whether the shade of the completed all-ceramic restoration corresponds to the desired shade.
If necessary, shade adjustments should be carried out by staining with VITA AKZENT Plus, VITA AKZENT Plus paste or VITA SHADING PASTE, or by layering with VITA VM 9.

See note on pages 21 and 30.

CAD design, milling
Detailed information can be found in the documentation of your CAD/CAM system.



The lug is cut off using a diamond bur or coarse, flexible discs.



Then the proximal surfaces are polished. Use flexible discs or similar tools (use caution and adjust low speed) to remove irregularities or unevenness at the margins.

Then the restoration is carefully fitted on the model, if present.

⚠ **Note**: Restorations made of VITABLOCS 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 for prepolishing.
- It is recommended to polish with polishing brushes and VITA Karat diamond polishing paste.
- When reworking, cool with water whenever possible and exert only slight pressure.

Characterization / Individualization of the shade

In esthetically demanding cases, the shades of restorations made of VITABLOCS can be characterized/individualized. Generally, two different concepts can be used:

- Characterization with VITA AKZENT Plus stains (see page 22)
- Individualization with porcelains of VITA VM 9 veneering material (see page 30)



Necessary firing equipment

A furnace, such as VITA VACUMAT 6000 M or VITA V60 i-Line, is required for characterizing with stains and glaze material and for individualizing with VITA VM 9.

Freely selectable control units can be connected to the furnace, such as



VITA vPad comfort - with all essential functions
– preinstalled Doc user with all chairside materials
– intuitive one-touch operation through self-explanatory symbols
– large 7-inch color touch screen with 1 GB photo viewer
– all necessary block programs already preconfigured
– 500 customizable firing programs
– 4 individual user profiles for personal settings



VITA vPad excellence – highly exclusive
– preinstalled Doc user with all chairside materials
– 8.5-inch color touchscreen with 2GB photo viewer
– operation of up to four sintering, firing or combipress furnaces using a single control unit
– 1000 customizable firing, pressing, sintering and crystallization programs
– creation of up to twelve user profiles



When using the basic VITA V60 i-Line, you benefit from predictable firing results and easy operation with proven VITA quality.

Learn more!
www.vita-zahnfabrik.com



Characterization with VITA AKZENT Plus stains
Anterior restorations can be perfectly characterized with stains in particular if discoloration of the surface needs to be reproduced. Teeth without highly translucent areas and with minor internal changes are particularly suitable.

⚠ **Note:** A layer of stain which is too thick inhibits the penetration of light and results in an unnatural appearance.
When using the new VITA AKZENT Plus pastes which feature excellent ceramic translucency, the final shade effect won't be recognized in the wet condition immediately after applying the stains to the milled VITA Mark II block but only after firing.

Systems in 3 different forms are available for characterizing with ceramic stains:



1. VITA AKZENT Plus PASTE KIT
with 19 stain pastes (shade table see page 51) for simple and fast surface characterization in the dental practice:

- ready-to-use pastes with uniform consistency and homogeneous pigmentation for fast application
- can be mixed with one another to achieve individual shade effects
- can be diluted or mixed again



2. VITA AKZENT Plus POWDER KIT
with 19 stain powders (shade table see page 51) for surface characterization:

Consistency can be adjusted by adding different quantities of liquid.
- The powder materials are perfectly suitable for mixing with the ceramic layering materials (add max. 5 % of stain powder) and for intensifying the shade of these materials.
- The AKZENT Plus materials can all be mixed with one another.
- Unlimited flexibility and cost-effectiveness since materials have unlimited shelf life.



3. VITA AKZENT Plus SPRAY KIT
Particularly suited for monolithic restorations made of VITABLOCS.
The spray glaze and spray finishing agent shades are ready to use and easy to apply.

- uniform application
- precise spray application without any waste as a result of scatter thanks to a special new spray head

⚠ **Note:** To save time, stains firing and glaze firing can be carried out simultaneously when using VITA AKZENT Plus PASTE or VITA AKZENT Plus POWDER materials.



Step-by-step procedure based on the example of VITA AKZENT Plus EFFECT STAINS*

Crown made from a VITABLOC block immediately after milling.
The lug is cut off using a diamond grinding tool or a flexible disk.

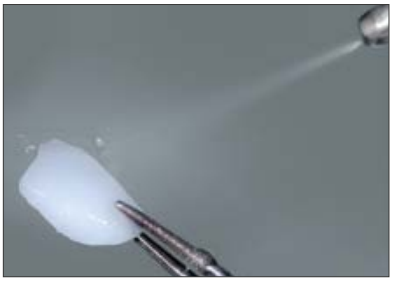


If present and necessary, the crown is fitted on the model.
Fine diamond tools are suitable for finishing. If possible, the ceramic should be ground when wet.

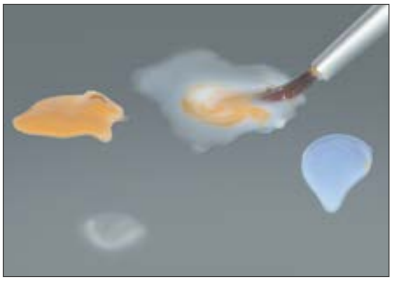


A texture marker can be applied to analyze the shape and surface texture, which can be optimized by grinding later on.

⚠ **Note:** The texture marker needs to be completely removed with steam prior to any firing process to avoid discoloration on the ceramic.



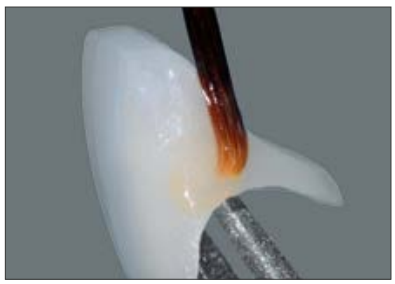
Grinding particles and grease are removed from the finished crown using steam or alcohol. A pair of tweezers (e.g. Smart Clip, Hammacher) or pick-up sticks (Hager & Werken) are suitable to hold the object.



The selected AKZENT Plus EFFECT STAIN POWDER stain and AKZENT Plus POWDER FLUID are mixed to obtain the desired consistency and intensity.

Additionally, AKZENT Plus FINISHING AGENT
can be added to adjust the intensity.

* Please observe the information in the Working Instructions VITA AKZENT Plus, No. 1925.



A thin transparent layer of stain is applied to the restoration.

First the stain is applied to the proximal surfaces.



A distinctive incisal edge effect can be achieved through the use of VITA AKZENT Plus EFFECT STAIN ES 11 (blue) and ES 12 (grey-blue). Additional shade characteristics can be imitated with suitable stain mixtures. A comparison with a shade sample (tooth) from the VITA Toothguide 3D-MASTER or the VITA classical A1–D4 shade guide can be used to check the result.
See the table on page 26/27.



The characterized restoration is placed on the firing tray and fired in the VITA VACUMAT.

Firing under vacuum is not required for glazing.

The figure on the left shows the restoration after the first firing.



A thin, covering layer of glaze material (VITA AKZENT Plus GLAZE) is applied in the next step. During the application, minor shade corrections can be integrated into the glaze material.

Optional:
Stain firing can be carried out together with glaze firing when using AKZENT Plus GLAZE. The restoration is coated with VITA AKZENT Plus GLAZE and then characterized with VITA AKZENT Plus stains.



Additionally, mechanical polishing of the glazed restoration can be carried out. Examples of what can be used for this purpose include Dia-Glaze (from Yeti) or VITA KARAT diamond polishing paste (for extraoral use only).

- Since VITABLOCS are only available in a limited number of shades, the classification table (see page 26) can be used for safe reproduction of shades not available as blocks using VITA AKZENT Plus.

- Please note that the monochromatic VITABLOCS Mark II and the multichromatic VITABLOCS TriLuxe, TriLuxe forte and RealLife are not layered like shade sample teeth, and because of this, the shades of 3D-MASTER Toothguide or VITA classical A1–D4 shade guide and the corresponding block or VITABLOCS guide are not identical. This is indicated by the additional letter "C" following the shade designation on the block.

⚠ **Note:** Do not apply excessively thick layers of stain; in cases of uncertainty, 2 stain fixation firings should be carried out.

- The correct selection of the block shade to reproduce the natural tooth shade of the patient is very important in this system. The milled restoration is the basic shade "carrier" and essential for the final impression of the stained restoration. Fine nuances of the shade are achieved by staining.

VITA SYSTEM 3D-MASTER

Classification table for shade characterization of VITABLOCS Mark II with VITA AKZENT Plus PASTE

Based on the information in the table and in order to mix the materials, the respective quantities are added next to each other onto the mixing tray using the brush, and then mixed to obtain the final paste. In this way, fine individual shade reproduction is achieved.

- VITA AKZENT Plus BODY STAINS should always be applied starting from the neck up to **max. two thirds of the tooth length** towards the incisal edge.

- As a result, the pure block shade forms the undercoat of the incisal edge. This is the precondition requirements to always achieve a good translucent effect with the additional use of EFFECT STAINS incisal shades.

- The ratios of the individual stain proportions depend on the wall thickness of the crown or the veneer. It is recommended to hold the shade sample tab from the VITA SYSTEM 3D-MASTER Toothguide next to the object when applying the shade, or to use it for underlying the stump if no VITA SIMULATE Preparation Material KIT is available for reproducing the stump shade, so that shade application can be adapted.

Lightness group	VITA SYSTEM 3D-MASTER Toothguide	Shade of VITABLOCS block or VITABLOCS Guide	Mixture for characterization
0	0M1	0M1C	only GLAZE glaze material, applied thinly
1	1M1	1M1C	BS 5 ES 12 / ES 13
1	1M2	1M2C	2/5 BS 01 + 2/5 BS 03 + 1/5 ES 13, ES 12
2	2L1,5	2M1C	2/4 BS 04 + 1/4 BS 02 + 1/4 BS 01 + small quantity of ES 13
2	2L2,5	2M2	2/5 BS 02 + 2/5 BS 04 + 1/5 BS 03
2	2M1	2M1	3/4 BS 05 + 1/4 ES 13 + small quantity of ES 07
2	2M2	2M2	1/2 BS 03 + 1/2 BS 04, incisal 1/2 ES 12 + 1/2 ES 13
2	2M3	2M3C	2/3 BS 02 + 1/3 BS 03 + 1 brush tip each of ES 04 and ES 05, stain must be applied thinly
2	2R1,5	2M1	3/5 BS 05 + 2/5 BS 03 + 1 brush tip of ES 13
2	2R2,5	2M2C	2/5 BS 05 + 2/5 BS 03 + 1/5 BS 02
3	3L1,5	3M1C	2/5 BS 04 + 2/5 BS 05 + 1/5 ES 07 observe block shade
3	3L2,5	3M2	2/5 BS 04 + 2/5 BS 02 + 1/5 ES 07 observe block shade
3	3M1	3M1C	2/4 BS 05 + 1/4 ES 07 + 1/4 ES 13 + 1 brush tip of ES 06
3	3M2	3M2C	2/4 BS 05 + 1/4 BS 03 + 1/4 ES 07 + (1 brush tip of ES 06, if a more intensive shade is required)
3	3M3	3M3C	2/4 BS 02 + 1/4 BS 03 + 1/4 BS 04 + 1 brush tip of ES 07
3	3R1,5	3M1C	4/5 BS 05 + 1/5 ES 07 + 1 small quantity of ES 06 each
3	3R2,5	3M2C	2/4 BS 05 + 1/4 BS 03 + 1/4 ES 07
	Incisal shade		Mixture of ES 12, ES 13 and ES 10. Applies to all shades, to achieve a translucent effect

VITA classical

Classification table for shade characterization of VITABLOCS Mark II with VITA AKZENT Plus PASTE

Based on the information in the table above and in order to mix the materials, the respective quantities are added next to each other onto the mixing tray using the brush, and then mixed to obtain the final paste. In this way, fine individual shade reproduction is achieved.

⚠ **Note:** VITA AKZENT Plus BODY STAINS should always be applied starting from the neck **across the entire length of the tooth** towards the incisal edge.

Tooth shade of the patient	Shade of the VITABLOCS block	Mixture for characterization
A1	**A1C**	4/5 BS 04 + 1/5 BS 03; **Incisal:** 1/2 ES 12 + 1/2 ES 13; **Mamelons:** ES 03
B1		2/3 BS 04 + 1/3 BS 02; **Incisal:** 2/3 ES 13 + 1/3 ES 12; **Mamelons:** ES 2 or 1/2 ES 2 + 1/2 ES 03
C1		3/5 BS 04 + 1/5 ES 7 + 1/5 ES 13; **Incisal:** ES 13 unmixed or 1/2 ES 7 + 1/2 ES 02
A2	**A2C**	3/5 BS 05 + 1/5 BS 02 + 1/5 BS 03; **Incisal:** 2/3 ES 02 + 1/3 ES 12; **Effects:** ES 02 and ES 05
A3	**A3C**	2/4 ES 05 + 1/4 BS 02 + 1/4 BS 03 + 1 small quantity of ES 6; **Incisal:** 2/3 ES 13 + 1/3 ES 12; **Effects:** with mixture of base shades or ES 02 and ES 06
A3,5	**A3,5C**	1/2 BS 05 + 1/2 BS 04 + 1 large quantity each of BS 02 and BS 03 in equal proportions, ES 07 and 1 small quantity of ES 13; **Incisal:** ES 13 + 1 brush tip of ES 01 white + mix with small quantity of glaze material. Brightens the incisal area slightly in the case of a monochromatic underlying layer.
A4	**A4C**	2/4 BS 05 + 1/4 BS 04 + 1/4 ES 07 + 1 brush tip of BS 03; **Incisal:** ES 12 + 1 brush tip of ES 01 white + mix with small quantity of glaze material; brightens the monochromatic underlying layer. If an increased grey value is intended: add small quantity of ES 13 to the mixture
B2	**B2C**	1/2 BS 03 + 1/2 BS 04, **Incisal:** 1/2 ES 12 + 1/2 ES 13
B3	**B3C**	2/3 BS 02 + 1/3 BS 03 + 1 brush tip each of ES 04 and ES 05. Generally, apply the shade very thinly since a large content of the base shade is already found in the underlying layer; **Incisal:** Mix 1/2 ES12 and 1/2 ES 13 with some glaze material + 1 small quantity of ES 01 white if a somewhat brighter shade is to be achieved.
C2	**C2C**	3/4 BS 04 + 1/4 ES 07 **Incisal - variation 1:** Mix some glaze material with very small quantity of ES 01 and use as incisal. This creates a brighter shade; **Incisal - variation 2:** Mix ES 13 with 1 brush tip of ES 01 white and some glaze material; this will brighten less and a subtle greyish shade is obtained
C3	**C3C**	2/3 BS 04 + 1/3 ES 07 + 1 brush tip of BS 02 and a very small quantity of ES 14; **Incisal:** Variation 1 and 2 as for shade C2
C4	**C3C**	2/4 ES 07 + 1/4 BS 04 + 1/4 BS 05 + 1 brush tip each of BS 03 and ES 14
D3	**D3C**	2/4 BS 05 + 1/4 BS 04 + 1/4 ES 07 (+ 1 brush tip of ES 06 if a more intensive shade is required)

Overview of recommended firing programs for characterization with VITA AKZENT Plus in the VITA VACUMAT

	Predry. °C	⟶ min	↗ min	↗ °C/min	approx. temp. °C	⟶ min	VAC min
Stains fixation firing	500	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	–



Optional:

VITA AKZENT Plus GLAZE SPRAY

The VITA AKZENT Plus GLAZE SPRAY can be used as an alternative for glazing with VITA AKZENT Plus GLAZE material or VITA AKZENT GLAZE PASTE.



VITA AKZENT Plus GLAZE SPRAY is a spray-on ceramic powder that can be easily applied and is suitable for glazing all-ceramic and metal ceramic restorations, such as inlays, onlays, veneers, crowns and bridges with a sintering temperature of ≥ 800°C.

Stains firing can be carried out together with glaze firing when using VITA AKZENT Plus GLAZE SPRAY.

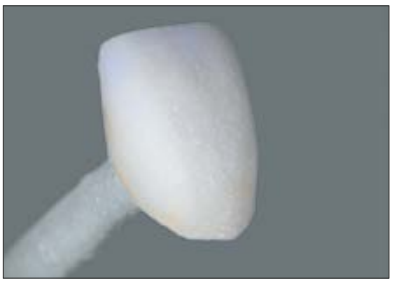
⚠ **Note:** To avoid spraying onto the adhesive surfaces of the restoration (e.g. basal surface of inlays, inner surfaces of crowns and veneers), it is recommended to use VITA Firing Paste to prepare an individual firing tray. As a result, inaccuracy of fit is avoided. See working instructions on page 35. In addition, glaze material can not be adequately etched with hydrofluoric acid.



⚠ **Note:** Shake VITA AKZENT PLUS GLAZE SPRAY well prior to use (approx. 1 min.). The mixing ball needs to be heard clearly.

Apply VITA AKZENT Plus GLAZE SPRAY to the stain at a distance of approx. 10 - 15 cm to the restoration in a way to ensure uniform and complete coverage.

Spray intermittently to achieve optimum results.



Let the solvent evaporate completely while spraying to be able to control the thickness of the glaze layer that has already been applied. A whitish (GLAZE, GLAZE LT) and reddish (BODY) coat indicates a uniform layer. If required, spray again.

⚠ **Note:** The use of a hairdryer results in faster evaporation.



The bottle needs to be shaken between the individual spraying processes for several restorations.

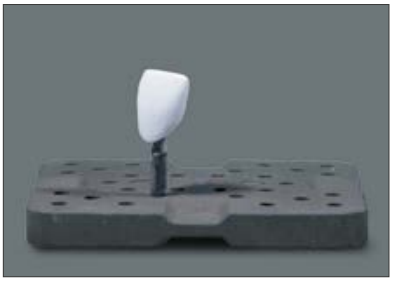
Best results are obtained with 2 to 3 layers of glaze material.

Place the restoration on a firing tray.





⚠ **Important information:** Since dust is formed during spraying, always wear a face mask and safety goggles.
Additionally, it is recommended to use an extraction unit.



Firing of VITA AKZENT Plus GLAZE SPRAY in the VITA VACUMAT

Predry. °C	→ min	↗ min	↗ °C/min	approx. temp. °C	→ min	VAC min
500	4.00	5.37	80	950	1.00	–



Restoration after characterization of the shade

Individualization of anterior crowns and veneers with VITA VM 9

VITA VM 9 veneering material is comprised of a fine-structure ceramic with a CTE of 9.0 – 9.2 ($10^{-6} \cdot K^{-1}$) for veneering crown and bridge frameworks made of yttria-stabilized zirconia (Y-ZrO_2) such as VITA In-Ceram YZ, for example, and for individualizing milled restorations made from fine-structure feldspar ceramic blocks with a CTE (20 – 500°C) of approx. 9.4 ($10^{-6} \cdot K^{-1}$).



- VITABLOCS Mark II
- VITABLOCS TriLuxe
- VITABLOCS TriLuxe forte
- VITABLOCS RealLife



The VITA VM 9 ESTHETIC KIT for VITABLOCS (Prod. No. BV9EKCV2) with selected VITA VM 9 materials and accessories is available and specially designed for individualizing.

VITA VM 9 materials excel in their refraction and reflection behavior which can be compared to that of enamel. The use of the additional fluorescent and opalescent materials allows for the enhancement of the esthetic results. Please observe the information in the corresponding Working Instructions, No. 1190.

Since both the base ceramic as well as the veneering ceramic are finely-structured, the behavior of VITABLOCS restorations individualized with VITA VM 9 ceramic is similar to that of natural tooth enamel.

Contraindication

VITA VM 9 must not be used for direct veneers on copings made from VITABLOCS.

⚠ **Important information:** To ensure clinical success, the milled restorations may only be reduced prior to individualizing with VITA VM 9 if minimum values for wall thickness in restorations are observed. See also information on page 7. Reduction of the restorations can also be carried out with the CAD software.

Veneer

The thickness of a milled veneer should not be less than 0.5 mm to avoid distortion of the restoration when firing on VITA VM 9 (see page 15). In such cases the use of VITA Firing Paste is strongly recommended.



Step-by-step procedure based on the example of an anterior crown

Milling of the restoration.

The lug is removed with a diamond-coated milling tool.
Any premature contacts are ground off carefully from the inner side of the veneer
Mesial and distal contacts are checked.



Place the crown immediately after the grinding process on the working model prior to the cut-back process.



Pretreatment
To obtain sufficient space for layering on the enamel, the incisal area is reduced with a diamond milling instrument.

> ⚠ **Important information:** Restorations made of VITABLOCS fine-structure feldspar ceramic must not be reworked using tungsten carbide instruments since such instruments produce microcracks and damage the ceramic.
> It is recommended to exert low pressure and use sufficient water cooling.

In the case of morphological reduction, pronounced undercuts must be avoided as they weaken the base ceramic.
The minimum thickness of the basic material must be adhered to (see page 17 ff).



Remove any grinding particles from the veneer with steam or alcohol.



Optional:
Characterization with VITA AKZENT Plus stains

VITA AKZENT Plus stains can be used for external characterization of restorations made from VITABLOCS, and after morphological reduction, stains can also be integrated into fissures and mamelon structures (see firing table) before starting actual layering with VITA VM 9 materials. Enhanced shade effect from the depth is achieved especially in cases of limited space.



Fixation of stains

Recommended firing

Predry. °C	→ min	↗ min	↗ °C/min	approx. temp. °C	→ min	VAC min
500	4.00	4.23	80	850	1.00	–



⚠ **Important information:** Before applying the VITA VM 9 materials, modelling liquid (VITA VM MODELLING LIQUID) should be applied to the reduced restoration to achieve adequate wetting.

Noncompliance will result in the fact that the ceramic material will come off the basic structure.



Application of VITA VM 9 MAMELON



Application of VITA VM 9 ENAMEL

Enamel classification

VITA SYSTEM 3D-MASTER

Block shade	0M1C	1M1C	1M2C	2M1C	2M2C	2M3C	3M1C	3M2C	3M3C	4M2C
Enamel	ENL	ENL	ENL	ENL	ENL	ENL	ENL	ENL	ENL	END

VITA classical A1–D4

Block shade	A1C	A2C	A3C	A3,5C	A4C	B2C	B3C	C2C	C3C	D3C
Enamel	ENL	ENL	ENL	END	END	END	END	END	ENL	END



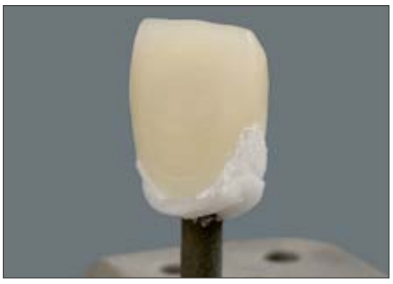
The layered restoration ready for "individualization firing."

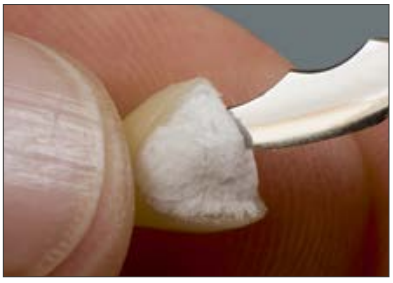
Place the individualized restoration on a suitable firing tray.

VENEER: place on fibrous pad. When using fibrous pad, the final firing temperature needs to be raised by approx. 10-20°C.









Use of VITA Firing Paste

Indication

VITA Firing Paste is a ready-to-use, fire-resistant paste for the fabrication of individual firing trays for all-ceramic and metal ceramic techniques. The material enables the secure attachment of firing objects on the firing tray, and is used for stabilizing substructure-free press ceramic restorations during the firing procedure, while at the same time ensuring optimum heat distribution. VITA Firing Paste is easy to remove again after completion of the firing cycle.

Use

Apply VITA Firing Paste directly from the syringe into the restoration or the inner surfaces of the restoration (slightly overfill the restoration) and place the restoration carefully onto the firing tray.

⚠ **Important information:** VITA Firing Paste contains aluminium silicate fibers. Wear a face mask and work under an extraction unit when removing the hardened paste.
Alternatively: rinse off under running water. Any residue is removed in the ultrasonic bath. Do not sandblast!
See information on hazardous substances on page 53.

Recommended firing of VITA**VM®9 in the VITA VACUMAT®**

Predry. °C	→ min	↗ min	↗ °C/min	approx. temp. °C	→ min	VAC min
500	6.00	7.49	55	930	1.00	7.49

When using VITA Firing Paste, the firing temperature for VITA VM 9 should be 10-20 °C above the values provided in the working instructions for VITA VM 9.



Restoration after individualization firing

Finishing
Finish the restoration. Mechanical polishing with diamond polishing paste (KARAT diamond polishing paste, VITA).

⚠ **Important information:** In case of dust formation, use an extraction system or wear a face mask. Additionally, protective goggles must be worn when grinding the fired ceramic.





If required, the entire restoration can be coated with VITA AKZENT Plus GLAZE POWDER, AKZENT Plus GLAZE SPRAY, AKZENT Plus GLAZE PASTE or with VITA AKZENT Plus FINISHING AGENT POWDER or PASTE.

To achieve uniform gloss, the restorations should be polished with rubber polishers prior to glaze firing.



Completed restoration on the model after glaze firing.



A texture marker can be applied to analyze the shape and surface texture, which can be optimized by grinding later on.

⚠ **Note:** The texture marker needs to be completely removed with steam prior to any firing process to avoid discoloration on the ceramic.

	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 GLAZE POWDER /FINISHING AGENT POWDER	500	4.00	5.15	80	920	1.00	–
Glaze firing VITA AKZENT Plus GLAZE PASTE / FINISHING AGENT PASTE	500	6.00	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 VITA 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. **low-fusing (low temperature)

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



VITA VM 9 ESTHETIC KIT for VITABLOCS for CEREC

Product line content

Quantity	Contents	Material
1		VITABLOCS Mark II 3D-MASTER Sample Set
1	12 g	WINDOW WIN
1	12 g	NEUTRAL NT
2	12 g	ENAMEL ENL, END
1	12 g	EFFECT PEARL EP1
2	12 g	EFFECT ENAMEL EE1, EE10
1	12 g	CORRECTIVE COR1
1	12 g	EFFECT OPAL EO2
2	12 g	EFFECT CHROMA EC1, EC4
1	12 g	MAMELON MM2
1	4 g	VITA AKZENT Plus GLAZE Paste
1	4 g	VITA AKZENT Plus FINISHING AGENT paste
1		Working Instructions
		Accessories

VITA**VM®9 EFFECT ENAMEL** – can be used for all enamel areas of the natural tooth – universally suitable translucent enamel effect material – to achieve a natural effect of depth	EE1	whitish-translucent	
	EE10	blue	
VITA**VM®9 EFFECT PEARL** – only suitable for effects on the surface, not for layering in – perfectly suitable for bleached restorations	EP1	shade in pastel-yellow	
VITA**VM®9 EFFECT OPAL** – to create the opal effect in restorations of young and very translucent teeth	EO2	opal, whitish	
VITA**VM®9 EFFECT CHROMA** – color-intensive modifier porcelains – to accentuate certain color areas of the tooth – to vary the lightness value in the neck, dentine and enamel areas	EC1	white	
	EC4	tender lemon yellow	
VITA**VM®9 MAMELON** – highly fluorescent porcelain which is mainly used in the incisal area – for shade characterization between incisal edge and dentine	MM1	warm yellow-brown	
VITA**VM®9 CORRECTIVE** – materials with reduced firing temperature (800°C) for corrections after glaze firing – in three nuances for neck, dentine and enamel areas	COR1	neutral	
	COR2	beige	
	COR3	brown	

Adhesive bonding
Today a variety of adhesive bonding systems are available on the market. The information given below describes a possible procedure.

Correct processing and adherence to the manufacturer's instructions are essential for the clinical success of all systems.

Light- or dual-curing fine-hybrid composites and a properly used functional enamel-dentine adhesive system (Total Bonding) should be used for adhesive bonding (cementation) of restorations made of VITABLOCS. The ultrasonic insertion method or preheated composite can be used for stronger composite materials.

The self-adhesive composite RelyX Unicem 2 (3M ESPE) can be used exclusively for crowns.

⚠ **Note:** Temporary bonding is not permitted for restorations made of silicate ceramic, such as VITABLOCS, since adequate stabilization is not ensured. Risk of fracture!

Essentially, there are no differences in the protocols for adhesive cementation of inlays, crowns and veneers. However, a few special aspects should be considered for adhesive cementation of veneers and crowns:

- 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. Because of this, a light-curing composite is preferable.
- A microbrush glued to the veneer using a light-curing bonding material can be used as a holder.
- Fixing the veneer with a finger allows more uniform distribution of pressure during adhesive placement.
- Adhesive bonding of crowns should preferably be performed using a more flowable, dual-curing composite (depending on the thickness of the layering).





Step-by-step description based on the example of an inlay

Conditioning the tooth substance
Try-in of the restoration; check the fit visually and by tactile means.



Drying (rubber dam) or placement of cotton rolls, dry-angles, sublingual roll



Enamel, if present, should be etched with VITA ETCHANT GEL (phosphoric acid gel, 35%) for 30 sec.

Spray for 30 sec. and dry for 20 sec.
Control: etched surface must be white opaque.



Agitate dentine primer (for example Syntac Primer or VITA A.R.T. BOND Primer A+B) should be worked in for 30 seconds with a disposable brush or microbrush, dry with air for 15 seconds. Dentine adhesive (e.g. Syntac adhesive) should be worked in for 30 seconds, dry with air for 15 seconds. Agitate primer coat of adhesive (for example Heliobond or VITA A.R.T. BOND, Bonder) for 20 sec, clean carefully for 5 sec (using air). Any excess should be soaked up with endo paper points.

Light curing: 60 sec.



Conditioning the restoration
Use ethanol to degrease the restoration before it is seated.

Apply VITA CERAMICS ETCH (hydrofluoric acid gel, 5%) to the inner surfaces.

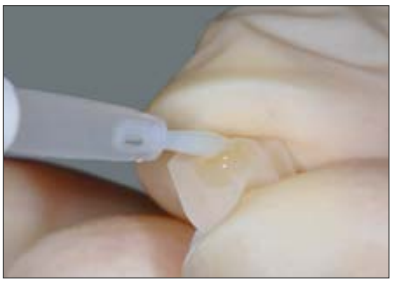
Etching time: 60 sec.



Completely remove any remaining acid by using water spray (60 sec) or clean in the ultrasonic bath. Then dry for 20 sec.
Do not brush clean, as there is a risk of contamination! After drying, the etched surfaces have a white opaque appearance.



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



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

The restoration must be protected against light before it is inserted.



Insertion
Composite is applied thinly into the cavity and the restoration is carefully placed in situ.

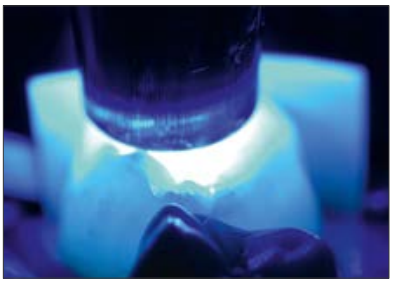
Use a probe to remove excess composite.



Optional:
Seat the restoration by means of ultrasonic insertion.



Application of oxygen protection gel (for example VITA OXY-PREVENT) to the cervical margins to prevent oxygen inhibition.



Light curing - buccal: 40 sec., oral: 40 sec., occlusal: 40 sec (for each proximal surface)

Use a powerful and properly functioning polymerization light. Generally, 2nd generation LED polymerization units with 5 W LED chips and a lamp power of > 1000mW/cm^2 are suitable, such as:

- Demi plus (Demetron)
- PenCure (Morita)
- Bluephase (Ivoclar Vivadent)
- G-Light (GC)
- SPEC 3 LED (Coltène Whaledent)
- Valo LED (Ultradent)



Remove excess with file or fine diamond abrasives (max. 40 µm).



Flexible abrasive discs are used for polishing proximal surfaces. Thin, coated acrylic discs have proven to be most suitable.



The shade of the completed restoration matches the shade of adjacent teeth. Immediately after adhesive insertion, the teeth are often still dry and the restorations may initially appear to be a little too dark.

Fine morphological adjustments of the occlusion

The occlusion should be completely free of interferences, i.e. without any premature contacts in static and dynamic occlusion. The marginal contacts should be carefully adjusted. In the case of pronounced convex or large proximal surfaces of which the margin made of ceramic is not supported by the shoulder, no marginal contacts should be positioned to avoid fracture. Central occlusal contacts should not be positioned on the margins of restorations. If possible, occlusally exposed dentine should be integrated into the restoration.



The following procedure is recommended:

When fabricating delicate restorations (in particular inlays and onlays with very thin ceramic layers), the occlusion should only be checked after definitive cementing to avoid fractures in the ceramic.



Use shimstock film for marking occlusal interferences in the static occlusion. Remove interference to the static occlusion caused by occlusal contacts and smooth the surface with a spindle-shaped diamond milling tool (40 µm, red color coding). Use a spindle-shaped diamond milling tool (40 µm) to mark and remove interference in the dynamic occlusion caused by occlusal contacts.

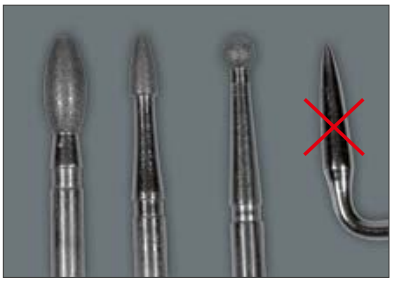
Sufficient cooling with water must be ensured!



The use of pointed diamond tools must be avoided since they penetrate too deeply into the fissures and may weaken the ceramic.



Prepolish with 8 µm diamond abrasives while exerting slight pressure; adequate cooling with water must be ensured.



Note: Fine-grit diamond tools with round tip should be used for finishing ceramic restorations. Tools with a sharp tip (see composite contouring tool, to the right in the photo) will weaken the ceramic.









Finishing and polishing
Careful polishing is important 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. Prior to cementation, proximal areas are polished outside the mouth, for example with VITA KARAT diamond polishing paste. To achieve a natural surface shine, the following procedure is recommended:

Finishing/smoothing the outer and occlusal surface of the restoration using Al_2O_3-coated flexible discs (for example Sof-Lex discs, 3M Espe) in descending order of grit size (black, dark blue, medium blue, light blue) and fine-grit finishing diamonds while exerting little pressure and ensuring sufficient cooling with water (observe manufacturer's instructions).

High-gloss polishing of the surface with Occlubrush (Hawe Neos) and diamond polishing paste (for example Ultra II ceramic polishing paste, Shofu). Polish in the lower speed range (max. 15,000 rpm) with intermittent pressure (without water cooling).

Finally, the polishing paste is removed with the Occlubrush brush and water spray.

Completely polished restoration

Fluoridating the working area

Removal of adhesively bonded partial restorations
When fabricating restorations such as inlays, onlays, partial crowns, etc. the transitions between restoration, composite and tooth substance can hardly be distinguished during wet grinding. In order not to penetrate too deeply into the tooth substance, stopping the tool occasionally and drying the working area with air is recommended.

Recommended tool:
Cylindrical diamond tool (105 – 124 µm).

Trepanation
A cylindrical diamond tool is preferably used to create a trepanation opening (transversal). Once the opening is created, continue using conventional procedures.

Dentist

Preparation instruments:	Intensiv SA
Retraction cord:	Ultradent
Cord packer:	Deppeler
Contrast spray:	Powder Scan Spray (VITA)
Matrixes and wedges:	Hawe Dead Soft (KerrHawe)
Glycerine gel for try-in:	OXY-PREVENT (VITA)
Phosphoric acid etching gel:	ETCHANT GEL (VITA)
Ceramic etching gel:	CERAMICS ETCH (VITA)
Composite:	DUO CEMENT (VITA)
Adhesive system:	A.R.T. BOND (VITA)
Composite heater:	AdDent, (American Dental Systems; American Dental Supplies)
Flexible polishing discs:	Sof-Lex (3MEspe)
Polishing brushes:	Occlubrush (KerrHawe)
Diamond polishing paste:	Ultra II Keramik polishing paste (Shofu). KARAT, extraoral polishing paste (VITA)
Disposable applicators:	Microbrush
Cavity cleaning:	ICB Brushes (Ultradent)

Dental laboratory

CAM-base stone (stone for scanning) (Dentona)
Paste to check occlusion and contacts, Pasta rossa, 3 g (Anaxdent)
Texture marker (Benzer Dental AG)
Smart Clip holding forceps (Hammacher)
Pick-up sticks (Hager & Werken)

Furnace: VITA VACUMAT 6000 M (for all types of firing processes)

Materials for characterization / individualization of the shade

VITA VM 9 ESTHETIC KIT for VITABLOCS
VITA INTERNO KIT
VITA AKZENT Plus SPRAY KIT
VITA AKZENT Plus POWDER KIT
VITA AKZENT Plus PASTE KIT
VITA SIMULATE Preparation Material Set
VITABLOCS Guide 3D-MASTER
VITA FIRING PASTE



Types of VITABLOCS®

VITABLOCS® Mark II
Fine-particle, monochromatic feldspar ceramic blocks with the abrasion characteristics of natural tooth enamel, clinically proven a million times over since 1990.



VITABLOCS® TriLuxe forte
Fine-structure feldspar ceramic blocks with different degrees of chroma (neck, dentine, enamel).



VITABLOCS® TriLuxe forte
Fine-structure feldspar ceramic blocks with different degrees of chroma with the color transition from the enamel to the neck layer even more finely nuanced. At the same time, greater emphasis is given to the chroma in the neck area.



VITABLOCS RealLife®
Fine-structure feldspar ceramic blocks with a three-dimensional block structure that matches the structure of natural dentition with an arched shade gradient from the dentine to the incisal edge, especially for highly esthetic anterior restorations.



Materials for individualization of the shade

VITA**VM**®9 ESTHETIC KIT for VITABLOCS®
Assortment containing a selection of VITA VM 9 materials which are perfectly suitable for individualizing restorations made of VITABLOCS.



VITA AKZENT® Plus PASTE KIT
Assortment including 19 ready-to-use, fine-grained stain pastes for characterizing the shade of restorations made of VITABLOCS, particularly in dental practices.



VITA AKZENT® Plus POWDER KIT
Assortment including 19 ceramic stain powders for characterizing restorations made of VITABLOCS. The stains have good stability characteristics as well as shade stability and can be mixed with one another.



VITA AKZENT® Plus SPRAY KIT
Assortment containing 5 BODY SPRAYS and one GLAZE SPRAY.
Especially suited for staining large surfaces, particularly for monolithic restorations.



VITA AKZENT® Plus GLAZE SPRAY
Easy to apply, spray-on ceramic powder for simple and time-saving glazing of ceramic restorations. Ideal for glazing monolithic restorations made of VITABLOCS in the dental practice.

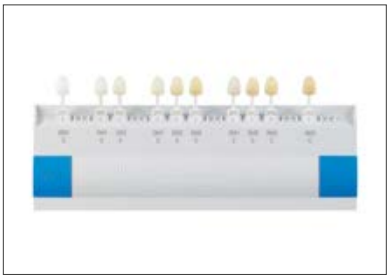


VITA INTERNO KIT
Assortment including 12 fine-particle ceramic materials and accessories for perfect reproduction of fine in-depth shade effects, such as subtle contrasts in the incisal area. The high fluorescence (identical to that of natural teeth) results in tremendous brilliance of the shades.



VITA FIRING PASTE
Ready-to-use, fire-resistant paste for the fabrication of individual firing trays.
The material enables secure attachment of objects on the firing tray.
The paste can be easily removed again after firing.

Standard pack, 1 syringe cont. 12 g
Large pack, 3 syringes cont. 12 g each



Shade determination

VITABLOCS® Guide 3D-MASTER
Shade guide with 10 shade sample teeth made of the original VITABLOCS Mark II ceramic enables simple, fast and accurate selection of the matching VITABLOCS block in VITA SYSTEM 3D-MASTER.



VITA Linearguide 3D-MASTER®/ VITA Toothguide 3D-MASTER®
With the VITA Linearguide 3D-MASTER you can determine the correct tooth shade swiftly and accurately. The modern design and the linear arrangement enable quick determination of the suitable tooth shade. The VITA Linearguide 3D-MASTER is an alternative to the proven VITA Toothguide 3D-MASTER and features different (linear) arrangements of the shade sample teeth.



VITA Easyshade® V
The digital shade measurement device VITA Easyshade V allows users to determine the shade of natural teeth or to verify restorations in a matter of seconds, regardless of available lighting. The tooth shade measured is indicated in VITA classical A1–D4, VITA SYSTEM 3D-MASTER and in VITABLOCS shades. Seamless design, Bluetooth®, communication software for PC, smartphone and tablet, inductive charging and many new features guarantee maximum precision, quality and ease of use.



VITA SIMULATE Preparation Material Set
Assortment with light curing composites and accessories for the fabrication of artificial dies in 6 shades: 0M1S to simulate bleached dies and the shades 1M1S, 2M3S, 3M2S, 4M3S and 5M3S. They can be used to simulate the shade of the prepared tooth even if it exhibits major discoloration. The shade result of the restoration made of VITABLOCS can be verified during the fabrication process and adjusted if required.



Materials for the optical impression

VITA Powder Scan Spray
Bottle containing 75 ml of blue spray-on pigment suspension with mint flavor for direct application (tooth surface) and for indirect use (plaster die/plaster model) for the opto-electronic impression of CAD/CAM restorations.



VITA DUO CEMENT KIT
Dual curing, two-component fine hybrid luting composite in one universal shade for VITA classical and VITA SYSTEM 3D-MASTER.
Contents: 2 syringes with 2.5 g base paste each, 2 syringes with 2.5 g catalyst paste each, accessories.



VITA A.R.T. BOND SET
Two-phase, light-curing dentine/enamel adhesive.
Contents: 1 bottle of 5 ml PRIMER A, 1 bottle of 5 ml PRIMER B, 1 bottle of 5 ml BOND, accessories



VITA ETCHANT GEL KIT
35% orthophosphoric acid gel for etching tooth substance,
dark blue colored, good stability characteristics
Contents: 2 syringes of 2.5 ml each, accessories



VITA CERAMICS ETCH (Nur für extraoralen Gebrauch!)
Hydrofluoric acid gel, 5%, for etching silicate ceramics, red colored.
Syringe containing 3 ml or bottle containing 6 ml.



VITASIL
Single-component silane bonding agent, syringe of 3 ml



VITA OXY-PREVENT
Neutral-colored glycerine gel to prevent the formation of an oxygen inhibition layer.
It is also suitable for use as a try-in paste.



Polishing

VITA Karat diamond polishing set*
Assortment containing 5 g of diamond polishing paste, 20 diamond felt wheels (Ø 12 mm) and one nickel-plated mandrel.

*For indirect use only



VITABLOCS® storage boxes

VITABLOCS®-Box
Metal-reinforced box made of high-quality acrylic for storing up to 12 VITABLOCS bars.



Storage box
Storage box made of high-quality acrylic for storing up to 36 VITABLOCS bars.

VITA**VM®9 CORRECTIVE** – with reduced firing temperature (760°C) for corrections after glaze firing – in three nuances for neck, dentine and enamel areas	COR1	neutral	neutral	
	COR2	sand	beige	
	COR3	ochre	brown	
VITA AKZENT Plus **EFFECT STAINS** POWDER 3 g or PASTE 4g – masking stains that offer superior coverage – for natural surface effects	ES01		white	 
	ES02		cream	
	ES03		lemon-yellow	
	ES04		sunshine yellow	
	ES05		orange	
	ES06		russet	
	ES07		khaki	
	ES08		pink	
	ES09		dark red	
	ES10		lilac	
	ES11		blue	
	ES12		grey-blue	
	ES13		grey	
	ES14		black	
VITA AKZENT Plus **BODY STAINS** POWDER, 3 g or PASTE, 4 g or SPRAY, 75 ml – translucent glazing stains – for modifying the shade effect of the base material	BS01		yellow	  
	BS02		yellow-brown	
	BS03		orange	
	BS04		olive-grey	
	BS05		grey-brown	
VITA SIMULATE Preparation Material – Light-curing composite for the fabrication of artificial dies to simulate the shade of the prepared tooth.	0M1S			
	1M1S			
	2M3S			
	3M2S			
	4M3S			
	5M3S			

The following products require hazard identification:		
VITA CERAMICS ETCH (hydrofluoric acid ceramic etching gel)	**Caustic / Toxic** For extraoral 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.	 
VITA ETCHANT GEL (Phosphoric acid etching gel)	**Caustic** 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.	
VITASIL® (Silane bonding agent)	**Highly flammable** Highly flammable liquid and vapor. Store container well sealed at an adequately ventilated place. Keep away from ignition sources - do not smoke. Do not empty into drains. This material and its container must be disposed of as hazardous waste.	 

VITA Firing Paste	**Health hazard** Classification of the fiber according to EU Directive 97/96/ EC:Carc. Cat 2 May cause cancer by inhalation. Avoid the release of dust; do not blow with compressed air. Use local extraction unit or particle filtering half mask during mechanical processing of the hardened paste. Irritates the skin. Avoid contact with skin and eyes. When working with the product, do not eat, drink and smoke. Keep out of children's reach.	
VITA AKZENT® Plus BODY SPRAY / GLAZE SPRAY	**Extremely flammable aerosol** Spray-on ceramic glaze material. For dental applications only. Not for direct use. Shake well before use. Pressurized container: do not puncture or burn. Protect from direct sunlight and temperatures above 50 C°. Do not pierce or burn even after use. Do not spray into flames or onto glowing objects. Keep away from ignition sources. - No smoking. Keep away from heat, sparks, open flames and hot surfaces.	

Protective clothing	While work is in progress, 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 or requested by fax at (+49) 7761-562-233.

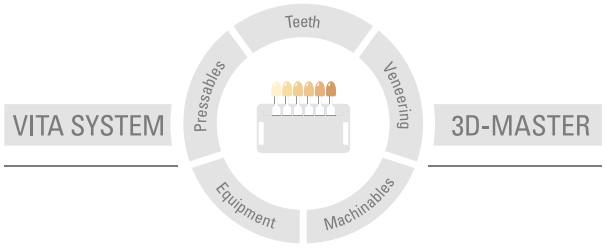
VITABLOCS®	Prod. No.
VITABLOCS (Concept brochure)	1454
VITABLOCS (Product Information)	1675
VITABLOCS RealLife (Product Information)	1726
VITABLOCS RealLife (Working Instructions)	1724
VITABLOCS TriLuxe forte for Rapid Layer Technology (Product Information)	1727
VITA Rapid Layer Technology (Working Instructions)	1740
VITA CAD/CAM Materials (Poster)	10050
CAD/CAM Materials (Compendium)	994
CAD/CAM materials (Quick guide for practice and laboratory use)	10049

Individualization of ceramic and accessories	Prod. No.
VITA AKZENT Plus (Working Instructions)	1925
VITA AKZENT Plus (Product Information)	1926
VITA AKZENT Plus (Order form pad)	1973
VITA INTERNO (Working Instructions)	770
VITA VM 9 (Working Instructions)	1190
VITA SIMULATE Preparation Material (Product sheet)	1462
VITA SIMULATE Preparation Material (Working Instructions)	1461
VITA Powder Scan Spray (Product Information)	1906

Clinical aspects	Prod. No.
Clinical Aspects of All-Ceramics (Preparation/Cementation guideline)	1696
VITA LUTING SET (Brochure)	897
Bonding recommendations for CAD/CAM materials (product information)	10146

Equipment	Prod. No.
VITA dental furnaces	10101
VITA Easyshade V	10136

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: 11.16

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 CE 0124 :

VITA**VM**®**9** · **VITABLOCS®** · VITA AKZENT® **Plus** · **VITASIL®**

Rx only

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These working instructions were prepared with the kind cooperation of
Dr. Alessandro Devigus, Bülach, Switzerland, Giordano Lombardi (dental technician), Dübendorf, Switzerland and Marianne Höfermann (dental technician), Munich, Germany.

VITA

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