

VITA SUPRINITY® PC

Working Instructions



VITA shade determination

VITA shade communication

VITA shade reproduction

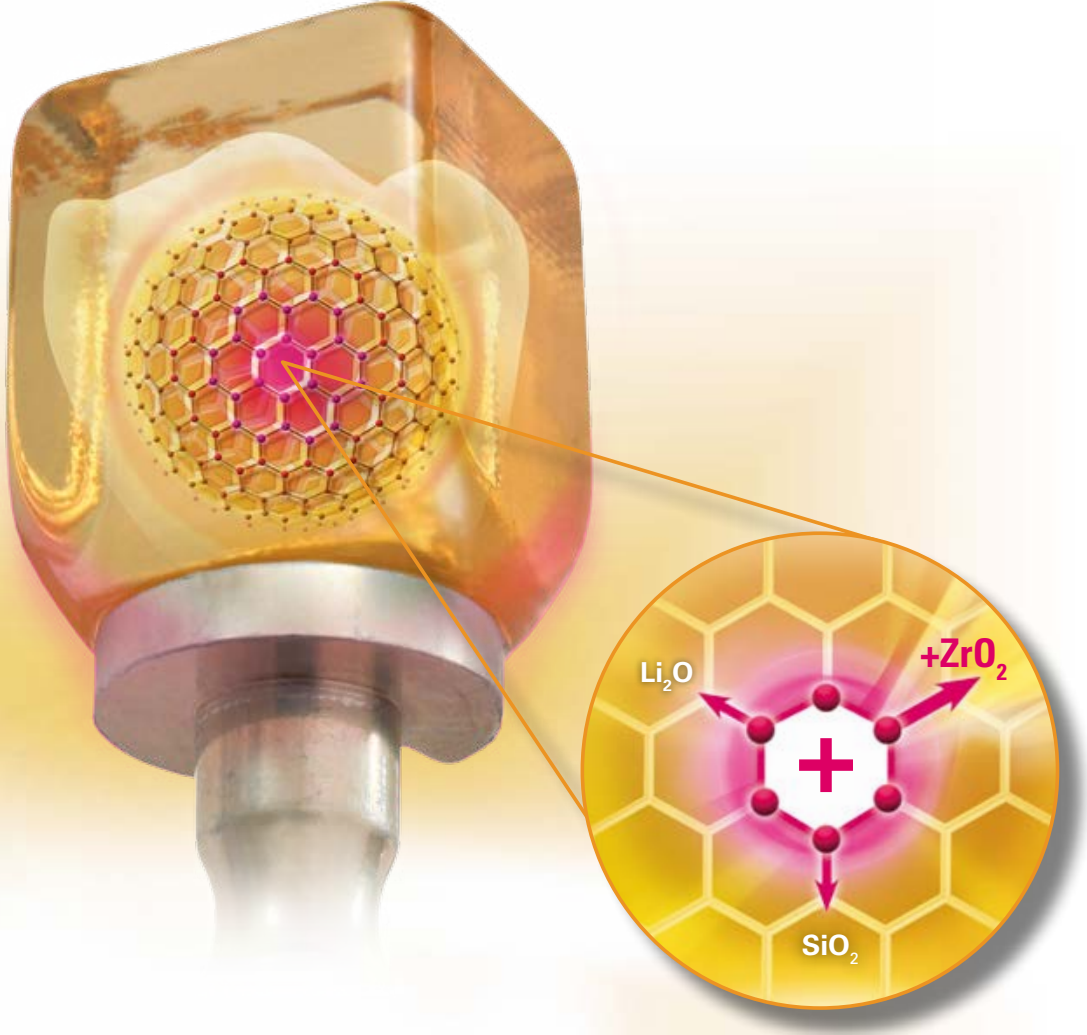
VITA shade control

Date of issue: 02.19

VITA – perfect match.

VITA

Zirconia reinforced lithium silicate glass ceramic (ZLS)







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Application area

VITA SUPRINITY PC is a zirconia reinforced lithium silicate glass ceramic for dental CAD/CAM applications for the fabrication of inlays, onlays, partial crowns, veneers, anterior and posterior crowns and anterior and posterior single tooth restorations on implant abutments.

Indications

Anterior and posterior crowns on implant abutments	
Anterior and posterior crowns	
Inlays / Onlays / Partial crowns	
Veneers	

Contraindication

- General
 - inadequate oral hygiene
 - inadequate preparation results
 - insufficient remaining natural tooth substance
 - insufficient space available
- Parafunction

Restorations made of VITA SUPRINITY PC are contraindicated for patients diagnosed with excessive masticatory functions, in particular teeth grinders and clenchers. Restoring devitalized teeth of patients with hyperfunctions is absolutely contraindicated.
- Bridges

The technical properties suggest that suitability for use in anterior and premolar bridge restorations can be expected. Approval will follow once corresponding clinical tests have been carried out.
- Veneer

Full veneers on molar crowns using veneering ceramic.

Successful processing of VITA SUPRINITY PC is not guaranteed in the following cases:

- Failure to observe the required minimum thicknesses
- Milling the blocks in a non-compatible CAD/CAM system
- Layering with veneering materials other than VITA VM 11 fine structure feldspar ceramic, which has been matched especially with VITA SUPRINITY PC.

VITA SUPRINITY PC

Physical / mechanical properties*	Unit of measure	Value**
CTE	10^{-6} K^{-1}	11.9 – 12.3
3-point flexural strength	MPa	approx. 420
Elastic modulus	GPa	approx. 70
Hardness according to Vickers (HV)	MPa	approx. 7000
Chemical solubility	$\mu\text{g}/\text{cm}^2$	approx. 40

Components	Wt%**
ZrO ₂ (zirconia)	8 – 12
SiO ₂ (silicon dioxide)	56 – 64
Li ₂ O (lithium oxide)	15 – 21
La ₂ O ₃ (lanthanum oxide)	0.1
Pigments	< 10
Various	> 10

VITA VM 11





Physical / mechanical properties*	Unit of measure	Value**
CTE	10^{-6} K^{-1}	11.2 - 11.6
Softening temperature	°C	approx. 600
Transformation temperature	°C	approx. 540
Solubility in acids	$\mu\text{g}/\text{cm}^2$	approx. 8
3-point flexural strength	MPa	approx. 100

Components	Wt%**
SiO ₂	62 - 65
Al ₂ O ₃	8.5 - 12
Na ₂ O	5 - 7.5
K ₂ O	9 - 12
CaO	1 - 2
ZrO ₂	< 1
B ₂ O ₃	4 - 6

* Information according to ISO 6872 / ** Source: Internal study, VITA

VITA SUPRINITY PC is available in the **translucency levels T and HT** and in the **size PC-14**.

From a processing point of view, all restorations listed below can be fabricated. All VITA SUPRINITY PC (T and HT) blocks feature natural opalescence and harmonious fluorescence and enhance the natural appearance of the restoration. From the point of esthetics, however, the following indication is recommended for the respective processing technique:

Degree of translucency	Processing technique		Indication			
	Staining technique	Cut-back technique	Inlay / Onlay / Partial crowns	Veneer	Crowns	Implant-supported crowns
						
T	●	●	○	○	●	●
HT	●	○	●	●	○	○

● recommended ○ possible

T (Translucent)

The T blocks are available in the following shades: 0M1, 1M1, 1M2, 2M2, 3M2, 4M2, A1, A2, A3, A3.5, B2, C2 and D2. Due to their shade – which is similar to dentine - and low translucency, they are particularly suitable for the fabrication of crowns.

Restorations made of T blocks excel from a lightness level and a warm chroma that correspond to natural dentine and are used for the cut-back technique with VITA VM 11. By means of individualization, highly esthetic restorations can be fabricated with the layering materials.

HT (High Translucent)















They are also available in the following shades: 0M1, 1M1, 1M2, 2M2, 3M2, 4M2, A1, A2, A3, A3.5, B2, C2 and D2. Thanks to their higher translucency, the HT blocks are matched to a mixture of dentine-incisal materials and are particularly suitable for smaller restorations, such as inlays, onlays, veneers and partial crowns.

















Restorations made of HT blocks exhibit natural translucency and an excellent chameleon effect.

Tip: If the restoration appears to be too translucent after crystallization firing, the opacity can be increased using a second crystallization firing process. This is not possible when combined with the combination firing.

Firing to increase the opacity

Predry. °C	→ min.	↗ min.	↗ °C/min.	T °C	→ min.	VAC min.	↘ °C*
400	4.00	8.00	55	840	8.00	8.00	680

TRANSPA DENTINE – translucent dentine material perfectly matched with VITA SUPRINITY PC		0M1	ENL	
		1M1	ENL	
		1M2	ENL	
		2M2	ENL	
		3M2	ENL	
		4M2	END	
		A1	ENL	
		A2	ENL	
		A3	ENL	
		A3.5	END	
		B2	END	
		C2	END	
		D2	END	
ENAMEL – enamel material in two nuances		ENL	whitish	
		END	reddish	
WINDOW – transparent material		WIN	crystal-clear	
NEUTRAL – universally suitable translucent material		NT	neutral	
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	
		EE3	pink-translucent	
		EE5	yellowish-translucent	
		EE7	orange-translucent	
		EE8	red-translucent	
		EE9	bluish-translucent	
		EE11	grey	
EFFECT PEARL – for pearl effects on the surface – perfectly suitable for bleached restorations		EP1	nuance in pastel yellow	

EFFECT OPAL – to create an opal effect		E01	neutral, universally suitable	
		E02	whitish	
		E03	bluish	
		E05	dark violet	
SUN DENTINE – to obtain a brighter or warmer shade, SUN DENTINE can be used or the respective TRANSPA DENTINE can be mixed with SUN DENTINE.		SD1	light yellow	
		SD2	orange	
		SD3	orange-red	
MAMELON – highly fluorescent material, which is mainly used in the incisal area between the incisal edge and dentine		MM1	beige	
		MM3	tender orange	
EFFECT CHROMA – color-intensive modifier porcelains to accentuate certain areas – to vary the lightness value in the neck, dentine and enamel areas		EC1	white	
		EC5	light orange	
		EC11	green-grey	

The design of the restoration is the decisive factor for the success of an all-ceramic restoration. The more accurate the design, the better the final results and the clinical success.

The following basic guidelines need to be observed:

- VITA SUPRINITY PC is the high-strength component and **must always account for more than 50%** of the total layer thickness of the restoration. A uniform layer thickness of VITA VM 11 across the entire surface to be veneered must be ensured. The entire thickness of the ceramic layer, however, should not exceed 2.0 mm (the optimum layer thickness ranges from 0.7 to 1.2 mm).
- In large preparations and for veneered or partially veneered restorations, the space to support the shape and the cusps must be compensated by the corresponding design of the high-strength VITA SUPRINITY PC component and not by the VITA VM 11 layering material. We recommend a ratio of two thirds of VITA SUPRINITY PC to one third of VITA VM 11.
- In partially veneered restorations, the functional contacts must not be located in the transition between VITA SUPRINITY PC and VITA VM 11.

To achieve clinical success, the following VITA SUPRINITY PC wall thicknesses must be adhered to* :

Minimum layer thicknesses	Inlay / Onlay	Veneer	Anterior crowns	Posterior crowns
				
Staining technique – incisal/occlusal	1.0	0.7	1.5	1.5
Staining technique – circumferential	1.0	0.6	1.2	1.5
Cut-back technique – incisal/occlusal	-	0.4	0.8	1.3
Cut-back technique – circumferential	-	0.6	1.2	1.3

All values in mm

* Successful clinical result: reliable shade reproduction and compliance with the requirements of the preparation guidelines.

Basics of preparation

In addition to the anatomical conditions, the preparation for all-ceramic restorations is exclusively based on the requirements profile of the ceramic material.

In contrast to traditional restoration methods, different and, primarily, material-specific requirements, must be observed for all-ceramics.

The basic requirements that generally apply to the clinical procedure, however, remain unchanged:

- Sufficient cooling during the preparation
- Avoiding exposure to heat caused by high pressure
- Use of instruments with good cutting performance
- Coarse preparation before fine preparation
- Protecting the gingiva against injury caused by milling/ grinding
- No subgingival preparation margin

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 involve 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.

The preparation should comply with the following requirements

Defect-oriented

- Minimally invasive preparation resulting in extremely thin restorations is not compatible with ceramics
- Providing a stable basis for the restoration
- Ensuring freedom of rotation and accurate positioning of the restoration

Tooth-specific

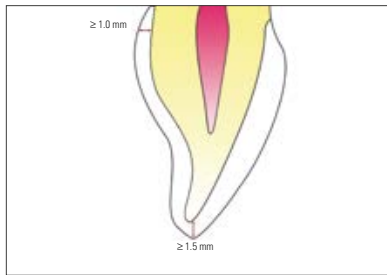
- Anterior, posterior tooth, alignment with the tooth axes (upper and lower)
- Securing the required residual dentine thickness of 0.7 - 1.0 mm in all areas

Material-specific

- Sufficient space for structural retention, depending on the indication
- Sufficient space for esthetic rehabilitation

Technology-specific

- Requirements profile of the CAD/CAM system in use
- Software specifications
- Geometry of axes of the milling or grinding system
- Size of the smallest milling or grinding tool



Anterior crowns

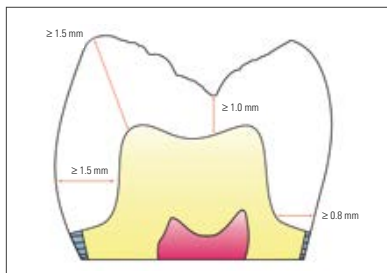
- The circumferential chamfer preparation has proven to be simple to implement and gentle to ceramic in the all-ceramic technique. In addition, it ensures mechanical support of the restoration.
- In esthetically challenging areas, a pronounced circumferential chamfer is recommended in order to achieve a natural shade effect of the ceramic.
- Sharp-edged transitions and intricate bevelling are to be avoided.

Recommended minimum wall thicknesses:

Incisal wall thickness: **1.5 mm**

Circumferential wall thickness : **1.2 mm**

Tapering crown margin: **1.0 mm**



Posterior crowns

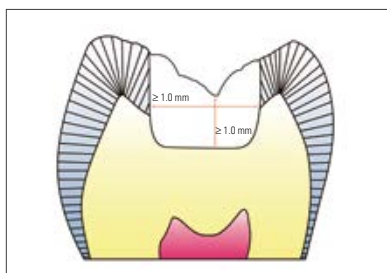
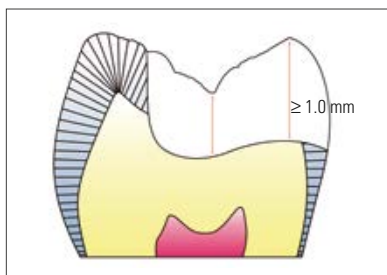
- Shoulder preparations of over 1.0 mm are to be avoided, particularly in the approximal area of the upper and lower premolars, and in the lingual area of the lower molars in order to avoid the risk of falling short of the required minimum wall thickness of the dentine.
- Sharp-edged transitions and intricate bevelling are also to be avoided for this indication.
- The preparation needs to ensure occlusal thickness of the restoration of 1.5 - 2.0 mm to guarantee adequate strength of the restoration.
- Reduce circumferentially by 1.5 mm for optimum esthetic results.

Recommended minimum layer thicknesses:

Fissure area: **1.0 mm**

Cusp area: **1.5 mm**

Circumferential wall thickness: **1.5 mm**

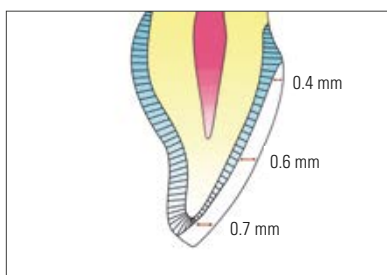


Inlays, onlays and partial crowns

- When preparing teeth for inlays, onlays and partial crowns, it is extremely important to adhere to the requirements of the ceramic material.
- When using the adhesive technique, box preparations to achieve mechanical retention are not required and will also lead to unfavorable ceramic designs.
- If preparation margins can be easily accessed, simple removal of excess adhesive and treatment of the adhesive joint are ensured.
- If the requirements on the minimum thickness of dentine-supported residual tooth substance are not adhered to, the probability of failure will increase considerably.
- To ensure increased resistance of the material, shaping of deep fissures can be omitted.

Recommended minimum layer thicknesses:

Fissure area:	1.0 mm
Isthmus area:	1.0 mm
Cusp area:	1.0 mm



Veneers

- The preparation of veneers offers a wide range of variations -
- from minimally invasive reduction of the surface enamel layers, through classical, more extensive veneer preparation to 3/4 of the crown, which mostly conserves the natural palatal tooth substance.
- Minimum reduction of the enamel (0.5 mm)
- Preparation border supragingival to paramarginal
- Incisal reduction (2.0 - 2.5 mm)
- Approximal reduction conserving the contact point

Recommended minimum layer thicknesses:

Incisal wall thickness:	0.7 mm
Labial wall thickness:	0.6 mm
Tapering crown margin:	0.4 mm

* More information on the preparation can be found in "Clinical Aspects of All-Ceramics," No. 1696 at www.vita-zahnfabrik.com



Sirona inLab MC X5

SYSTEM SOLUTIONS

VITA offers VITA SUPRINITY PC with a specific holder system for the following CAD/CAM systems:

- CEREC/inLab (Sirona Dental Systems GmbH)
- MyCrown Mill (FONA Dental s.r.o.)
- ARCTICA Engine/Everest Engine (KaVo Dental GmbH)
- Ceramill Motion 2/Ceramill mikro ic (Amann Girrbach AG)
- PlanMill 40 (E4D Technologies)



Amann-Girrbach Ceramill Motion 2

UNIVERSAL SOLUTIONS*

VITA offers VITA SUPRINITY PC with universal holder system for the following CAD/CAM systems:

- Core3d i line (Core3d Centres International N.V.)
- CORiTEC line (imes-icore GmbH)
- CS 3000 (Carestream Inc.)
- DMG ULTRASONIC series (DMG Mori AG)
- Vhf S1/S2/N4/Z4 (vhf camfacture AG)
- MILLING UNIT M series (Zirkonzahn S.r.l.)
- Röders RXD series (Röders GmbH)
- DG Shape DWX-4W (DG Shape)
- Zfx Inhouse 5x (Zfx GmbH)
- Straumann M/C line (Straumann Holding AG)

*) The CAD/CAM system partner has been validated by VITA Zahnfabrik for processing VITA SUPRINITY PC.



PlanMill 40

Important

Make sure that the restorations are thoroughly cleaned before further processing and that any residue of the milling additive of the CAD/CAM milling system is removed. Residue of the milling additive remaining on the surface may result in bonding problems and/or discoloration.

Suitable milling instruments are required for finishing and reworking VITA SUPRINITY PC. Special milling tools for glass ceramics or fine diamond abrasive tools must be used for this purpose.

Local overheating may occur if unsuitable milling tools are used or excessive pressure is exerted.

The following procedure is recommended for finishing restorations made of VITA SUPRINITY PC:

- Whenever possible, adjustments of VITA SUPRINITY PC restorations should always be performed in the precrystallized condition.
- Use only suitable milling tools, low speed and little pressure.
- Avoid overheating the glass ceramic.
- Restorations are fitted on the dies, carefully adjusted and approximal/occlusal contacts are checked.
- Use a fine diamond tool to grind the entire occlusal surface in order to smooth out the surface relief created in the CAM process.
- Make sure that the minimum thickness of the restoration is maintained after reworking (see information on page 10).
- Prior to crystallization, the restorations should always be cleaned thoroughly with the steam jet or with water in the ultrasonic bath.

⚠ The restorations **must not** be sandblasted with Al₂O₃ or abrasive beads!

Based on the respective clinical situation, the VITA SUPRINITY PC block to be used is first selected. The block shade and the corresponding translucency are determined based on the respective patient situation. After selecting the block, it is milled using the CAM system.



The milled restoration on the block with the holder*.

* The photo shows the UNIVERSAL holder. Suitable holders are used for other systems.



The use of suitable milling instruments is mandatory for processing VITA SUPRINITY PC. If unsuitable milling tools are used, chipping of the edges and local overheating may occur.

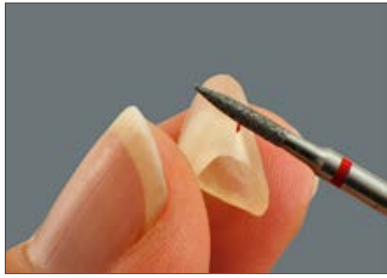


The lug is removed with a diamond-coated tool. Use only fine-grit diamond abrasive tools for contouring and finishing diamonds for prepolishing.

When reworking restorations, exert only slight pressure.



Mesial and distal contacts are checked.



Any premature contacts are ground off carefully from the inner side of the restoration.

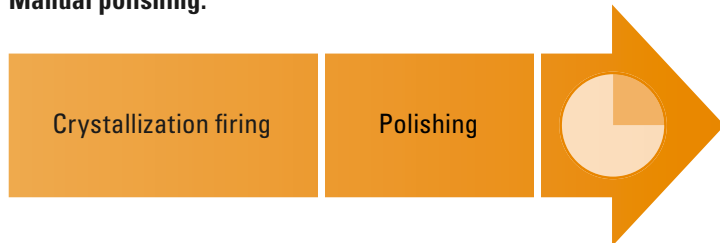


Finished restoration fitted on the model; ready for crystallization.
At this stage, accurate fit can also be checked in the mouth.
Occlusion and articulation can be checked during clinical try-in (amber condition).

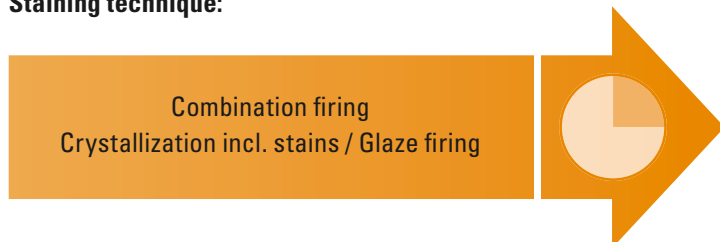
Then clean the restoration carefully.

After finishing and fitting or clinical try-in, the restoration is completed.
Various processing methods can be used for this purpose.

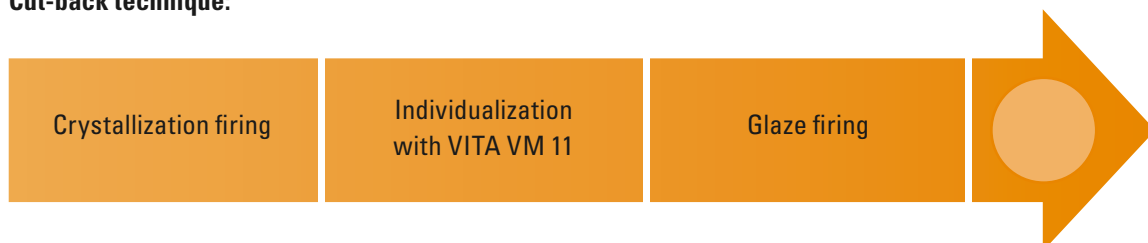
Manual polishing:



Staining technique:



Cut-back technique:



Always clean the restoration prior to crystallization. We recommend cleaning with steam and/or with water in the ultrasonic bath.

The restoration **must not** be sandblasted with Al_2O_3 or abrasive beads.



No special firing trays are required for crystallization.

To avoid contamination or adhesion, the exclusive use of honeycomb trays and platinum pins is recommended.



An auxiliary firing paste is not required either, since restorations made of VITA SUPRINITY PC feature high firing stability. However, the firing paste can be used for the fabrication of an individual firing tray and to support the restoration. **Only small** quantities of firing paste should be applied to the pin for fixation of the restoration. The restoration must not be filled with firing paste.



Note: Dark ceramic firing trays can also be used. To avoid adhesion of the restoration, the edges of the ceramic pins are covered with a small quantity of VITA Firing Paste or fibrous pad. It is recommended to round off the edges of the pins slightly. The restoration should be fixed in a way to avoid contact with the pin since direct contact can result in cracks. Clean the pins regularly and protect them against contamination.

Inlays and veneers can be placed directly on a fibrous pad or an individual firing tray.



When using fibrous pads, the temperature may vary by 10–20°C (in some cases even by up to 40°) from the reference value given, depending on the furnace that is used, and needs to be adjusted accordingly.



Crystallization

Recommended parameters for crystallization of VITA SUPRINITY PC restorations.

VITA VACUMAT

Predry. °C	→ min.	↗ min.	↗ °C/min.	T °C	→ min.	VAC min.	↘ °C *
400	4.00	8.00	55	840	8.00	8.00	680

* The firing chamber must not be opened during long-term cooling.

Programat Ivoclar Vivadent

B [°C]	S [min.]	t ↗ [°C/min.]	T [°C]	H [min.]	Vac. 1 [°C]/ Vac. 2 [°C]	L [°C]	tL *
400	4.00	55	840	8.00	410 / 839	680	0

* The firing chamber must not be opened during long-term cooling.

After firing, remove the VITA SUPRINITY PC restorations from the furnace and let them cool down to room temperature at a place protected from draft. Restorations that are still hot must not be touched with metal tongs, blasted or quenched.



Crystallized VITA SUPRINITY PC crown.

The surface of the VITA SUPRINITY PC restoration exhibits a **silky-mat** gloss after crystallization.

Note: If the restoration exhibits a lustrous outer or inner surface, the crystallization temperature should be reduced slightly. To carry out calibration, we recommend using the silver test set.



VITA SUPRINITY Polishing Set technical



VITA SUPRINITY Polishing Set clinical

Reworking

Restorations made of VITA SUPRINITY PC should only be reworked with diamond-coated grinding tools (e.g., EVE DIASYNT Plus coarse and medium) and special polishing instruments.

Special 2-stage polishing assortments were developed for intraoral and extraoral polishing of VITA SUPRINITY PC. Natural high gloss can be achieved quickly and easily.

- **VITA SUPRINITY Polishing Set technical with eight polishers for the handpiece**
- **VITA SUPRINITY Polishing Set clinical with six polishing instruments for the contra-angle**



After crystallization, the surface of the restoration can be polished manually using the instruments of the VITA SUPRINITY Polishing Sets technical or clinical.

Prepolishing is carried out using the diamond-coated, pink instruments at a speed of 7,000 - 12,000 rpm.



High-gloss polishing is subsequently carried out with the diamond-coated, grey instruments at a reduced speed of 4,000 – 8,000 rpm.

It is mandatory to avoid generation of heat during prepolishing and high-gloss polishing!

Reduced and uniform pressure must also be ensured.



When using the staining technique, stains and glaze materials are applied to complete the fully anatomical milled restorations.

The following materials can be used:

- VITA AKZENT Plus POWDER
- VITA AKZENT Plus PASTE
- VITA AKZENT Plus SPRAY

Individual characterization can be performed and the glaze materials can be applied either **before** or **after** crystallization firing.



Crystallization firing incl. stains / glaze firing

BEFORE crystallization firing

First coat the entire restoration with glaze material and then apply thin, transparent layers of effect and body materials.

A distinctive incisal edge effect can be achieved, for example, through the use of bluish/grey stains (ES10-ES13).



The characterized restoration is placed on the firing tray and fired according to the recommendations.

Combination firing

Recommended parameters for crystallization of VITA SUPRINITY PC with characterization (in this case: VITA AKZENT Plus powder). When using VITA AKZENT Plus paste, the predrying time should be extended by 2 minutes.

VITA VACUMAT

Predry. °C	→ min.	↗ min.	↗ °C/min.	T °C	→ min.	VAC min.	↘ °C *
400	4.00	8.00	55	840	8.00	8.00	680

* The firing chamber must not be opened during long-term cooling.

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B [°C]	S [min.]	t [°C/min.]	T [°C]	H [min.]	Vac. 1 [°C]/ Vac. 2 [°C]	L [°C]	tL *
400	4.00	55	840	8.00	410 / 839	680	0

* The firing chamber must not be opened during long-term cooling.



Characterized VITA SUPRINITY PC crown after combination firing.



Alternative: VITA AKZENT Plus glaze spray

VITA AKZENT Plus glaze sprays are spray-on ceramic powders that can be easily applied and used for glazing ceramics.



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 in order to avoid inaccuracy of fit. In addition, glaze material can not be adequately etched with hydrofluoric acid.

Only small quantities of firing paste should be used. Make sure to avoid filling the restoration with firing paste.



BEFORE crystallization firing

VITA AKZENT Plus Spray is sprayed evenly onto the entire restoration at a distance of 10 - 15 cm.

Spray intermittently to achieve optimum results.

Note: Shake VITA AKZENT PLUS glaze sprays well prior to use (approx. 1 min.). The mixing ball should be clearly heard.



For multiple restorations, shake the spray bottle well between applications. Best results are obtained with one to two layers of glaze material, especially when using VITA AKZENT Plus BODY SPRAYS.

A whitish (GLAZE, GLAZE LT) or pink (BODY) coat indicates a uniform layer.

Important: Make sure to avoid excessively thick layers.

Alternative: VITA AKZENT Plus glaze spray

Combination firing

Recommended parameters for crystallization of VITA SUPRINITY PC (with characterization) - in this case: VITA AKZENT Plus GLAZE SPRAY

VITA VACUMAT

Predry. °C	$\xrightarrow{\quad}$ min.	\nearrow min.	\nearrow °C/min.	T °C	$\xrightarrow{\quad}$ min.	VAC min.	\searrow °C*
400	4.00	8.00	55	840	8.00	8.00	680

* The firing chamber must not be opened during long-term cooling.

Programat Ivoclar Vivadent

B [°C]	S [min.]	t \nearrow [°C/min.]	T [°C]	H [min.]	Vac. 1 [°C]/ Vac. 2 [°C]	L [°C]	tL *
400	4.00	55	840	8.00	410 / 839	680	0

* The firing chamber must not be opened during long-term cooling.



Crystallized crown on the model.



The glazed restoration can also be mechanically polished. For this purpose, for example, VITA KARAT diamond polishing paste (for extraoral use only) can be used.



AFTER crystallization firing

After crystallization, the surface of the restoration can be processed with a fine diamond and the desired surface texture can be adapted to the adjacent teeth. Then grinding particles must be carefully removed from the restoration.



Then the cleaned crown can be coated with VITA AKZENT Plus GLAZE LT ..



... and subsequently characterized with the VITA AKZENT Plus EFFECT and BODY STAINS.

Stains and glaze firing

Recommended parameters for characterization (in this case: with VITA AKZENT Plus EFFECT STAINS and GLAZE LT powder materials). When using VITA AKZENT Plus paste materials, the predrying time should be extended by 2 minutes.

VITA VACUMAT

Predry. °C	→ min.	↗ min.	↗ °C/min.	T °C	→ min.	VAC min.
400	4.00	5.00	80	800	1.00	-



Stained and fired VITA SUPRINITY PC restoration on the firing tray.

In the cut-back technique, VITA VM 11 materials are applied to the incisal or occlusal areas of the milled, reduced VITA SUPRINITY PC restoration. Then stains and glaze firing with VITA AKZENT PLUS is carried out.

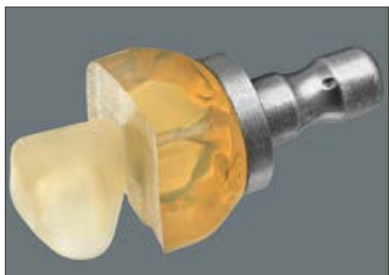
Finishing and preparing for crystallization

The proper milling tools are required for finishing and adjusting VITA SUPRINITY PC restorations. Special milling tools for glass ceramics or fine diamond abrasive tools must be used for this purpose.

If unsuitable milling tools are used, chipping of the edges and local overheating may occur (please observe the recommendations on milling tools for glass ceramics).

The following procedure is recommended for finishing VITA SUPRINITY PC restorations:

- Ideally, the cut-back is already taken into account in the CAD software during the design process requiring little manual rework.
 - Any milling adjustment of milled VITA SUPRINITY PC restorations should always be carried out in the precrystallized (amber, transparent) condition.
 - Use only suitable milling tools, low speed and little pressure to avoid chipping and delamination (especially at the edges).
 - Avoid overheating the glass ceramic.
 - The restoration is fitted on the dies and adjusted carefully; check approximal/occlusal contacts and adjust by milling in accordance with the clinical situation.
 - Minimum wall thicknesses must be ensured when finishing/adjusting the restoration. (please observe the information on page 10).
 - Refrain from designing extreme morphologies with undercuts for mamelons.
- ⚠ Prior to crystallization, the restorations should always be thoroughly cleaned with water in the ultrasonic bath and/or with the steam jet.
- The restorations **must not** be sandblasted with Al₂O₃ or abrasive beads.



Milling of a VITA SUPRINITY PC anterior crown.

* The photo shows the UNIVERSAL holder. Suitable holders are used for other systems.



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

This can be done using the corresponding software or ...



... with suitable milling instruments (manually)!

Note: Milling adjustments of VITA SUPRINITY PC restorations should be performed in the precrystallized condition.

Always clean the restoration with ultrasound in a water bath and/or with a steam jet prior to crystallization.



The minimum layer thicknesses must be observed during processing (see information on page 10).

⚠ Crystallization is **required** prior to veneering.



Crystallization

Recommended parameters for crystallization of VITA SUPRINITY PC

VITA VACUMAT

Predry. °C	→ min.	↗ min.	↗ °C/min.	T °C	→ min.	VAC min.	↘ °C*
400	4.00	8.00	55	840	8.00	8.00	680

* The firing chamber must not be opened during long-term cooling.

Programat Ivoclar Vivadent

B [°C]	S [min.]	t [°C/min.]	T [°C]	H [min.]	Vac. 1 [°C]/ Vac. 2 [°C]	L [°C]	tL *
400	4.00	55	840	8.00	410 / 839	680	0

* The firing chamber must not be opened during long-term cooling.



Crystallized crown. The surface of the VITA SUPRINITY PC restoration exhibits a **silky-mat** gloss after crystallization.

Note: If the restoration exhibits a lustrous surface, the crystallization temperature should be reduced slightly. To carry out calibration, we recommend using the silver test set.



Before the application of the VITA VM 11 materials, a fine diamond can be used (exert little pressure only) to perform minor corrections of the shape. Then clean thoroughly with the steam jet.



Depending on the requirements, the crown is coated with VITA VM 11 materials of the DENTINE or CREATIVE Kit.

The VITA INTERNO materials can be mixed in to intensify the shade.



The layered crown on the honeycomb tray ready for first dentine firing.







Place veneers, inlays, onlays or partial crowns on fibrous pads.

Note: When using fibrous pads, the temperature may vary by 10–20°C (in some cases by even more) from the reference value given, depending on the furnace that is used and needs to be adjusted accordingly.

When using firing pastes (e. g., VITA Firing Paste), the veneering ceramic must not come into direct contact with the firing paste, since the liquid contained in the paste burns more slowly. In such cases, gray discoloration may occur, but this can be avoided by extending the pre-drying time from 6 to 8 minutes.

First dentine firing

Predry. °C	 min.	 min.	 °C/min.	T °C	 min.	VAC min.
400	6.00	7.16	55	800	1.00	7.16

If required, a second dentine firing can be carried out.



Finishing

Finish the restoration and design (contour) the surface.



Then the surface is prepolished using the pink instruments of the VITA SUPRINITY Polishing Set clinical or technical ...



... and high-gloss polished with the grey instruments.



A goat hair brush and polishing paste (e.g., VITA KARAT diamond polishing paste) can also be used for high-gloss polishing.



Alternatively, VITA AKZENT Plus glaze material is applied across the entire surface of the restoration ...



... and then characterized with VITA AKZENT Plus EFFECT and BODY materials.

Glaze firing with VITA AKZENT Plus powder materials

Predry. °C	→ min.	↗ min.	↗ °C/min.	T °C	→ min.	VAC min.
400	4.00	5.00	80	800	1.00	-

When using the paste materials, the predrying time should be extended by 2 minutes.



Individualized restoration after glaze firing.






Information on the firing procedure

The firing result obtained with dental ceramics depends to a great extent on the individual user's firing procedure and design of the restoration to be veneered. The type of furnace, the location of the temperature sensor, the firing tray and the size of the workpiece during the firing cycles are important for the result of firing.


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. However, the user should consider this information only as a reference.

If the surface quality or the degree of transparency or glaze does not correspond to the firing result that is achieved under optimum conditions, the firing procedure must be adjusted accordingly. The critical 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 VITA VACUMAT firing parameters:

Predr. °C	Start temperature
	Predrying time in minutes, closing time
	Heating time in minutes
	Temperature rise rate in degrees Celsius per minute
T °C	End temperature
	Holding time for end temperature in minutes
VAC min.	Vacuum holding time in minutes
	Long-term cooling in degrees Celsius

Explanation of the Ivoclar Programat parameters:






B	Stand-by temperature [°C]
S	Closing time [min.]
t 	Temperature increase rate [°C/min.]
T	Holding temperature [°C]
H	Holding time [min.]
VAC 1	Vacuum on [°C]
VAC 2	Vacuum off [°C]
L	Long-term cooling [°C]
tL	Cooling temperature rate

The following aspects need to be observed when using furnaces for crystallization of VITA SUPRINITY PC:


- Furnaces of the VITA VACUMAT 6000 series are perfectly suited.
- If other furnaces or furnaces that are not tested are used, the following is required:
 - Furnaces need to have a function for controlled long-term cooling and a vacuum function.
 - Before using VITA SUPRINITY PC for the first time, please calibrate the furnace. Please adhere precisely to the manufacturer's instructions when calibrating your furnace.
- Use a suitable honeycomb tray and platinum pins for firing.

Note: Dark ceramic firing trays are also suitable. To avoid direct contact with the restoration during crystallization, the ceramic pins need to be coated with firing paste or fibrous pad. The pin must not come into direct contact with the restoration.
- The firing parameters provided in these working instructions have been matched with VITA VACUMAT furnaces. If different furnaces (not manufactured by VITA) are used, it may be required to adjust the temperatures.
- After firing, remove the VITA SUPRINITY PC restorations from the furnace and let them cool down to room temperature at a place protected from draft. Restorations that are still hot must not be touched with metal tongs, blasted or quenched.

Crystallization and combination firing

VITA VACUMAT	Predry. °C	 min.	 min.	 °C/min.	T °C	 min.	VAC min.	 °C*
Crystallization firing	400	4.00	8.00	55	840	8.00	8.00	680
Combination firing with AKZENT Plus (powder, spray)	400	4.00	8.00	55	840	8.00	8.00	680
Combination firing with AKZENT Plus paste	400	6.00	8.00	55	840	8.00	8.00	680

* The firing chamber must not be opened during long-term cooling.

Ivoclar Programat	B [°C]	S [min.]	t  [°C/min.]	T [°C]	H [min.]	VAC 1 [°C]/ VAC 2 [°C]	L [°C]	tL*
Crystallization firing	400	4.00	55	840	8.00	410 839	680	0
Combination firing with AKZENT Plus (powder, spray)	400	4.00	55	840	8.00	410 839	680	0
Combination firing with AKZENT Plus paste	400	6.00	55	840	8.00	410 839	680	0

* The firing chamber must not be opened during long-term cooling.

Crystallization in other devices:

VITA SUPRINITY PC is approved for crystallization in the VITA SMART.FIRE. However, due to the design, the temperatures can deviate slightly from the parameters given above. Please adhere to the specified crystallization and firing parameters and the operating instructions of the VITA SMART.FIRE furnace. VITA SUPRINITY PC is also approved for crystallization in the CEREC SpeedFire (Sirona Dental Systems GmbH) device. Note: Only the VITA AKZENT Plus Powder stains, VITA AKZENT Plus GLAZE LT Powder and VITA AKZENT Plus GLAZE LT SPRAY are approved for glazing. Please observe the operating instructions of the device manufacturer.

VITA VACUMAT	Predry. °C	$\overrightarrow{\text{min.}}$	\nearrow min.	\nearrow °C/min.	T °C	$\overrightarrow{\text{min.}}$	VAC min.
Stains fixation firing	400	4.00	3.45	80	700	1.00	-
Glaze firing with AKZENT Plus POWDER and SPRAY	400	4.00	5.00	80	800	1.00	-
Glaze firing with AKZENT Plus PASTE	400	6.00	5.00	80	800	1.00	-
Glaze firing with AKZENT Plus GLAZE LT POWDER and SPRAY	400	4.00	5.00	80	800	1.00	-
Glaze firing with AKZENT Plus GLAZE LT PASTE	400	6.00	5.00	80	800	1.00	-

Ivoclar Programat	B [°C]	S [min.]	t \nearrow [°C/min.]	T [°C]	H [min.]	VAC 1 [°C]/ VAC 2 [°C]	L [°C]
Stains fixation firing	400	4.00	80	700	1.00	-	-
Glaze firing with AKZENT Plus POWDER and SPRAY	400	4.00	80	800	1.00	-	-
Glaze firing with AKZENT Plus PASTE	400	6.00	80	800	1.00	-	-
Glaze firing with AKZENT Plus GLAZE LT POWDER and SPRAY	400	4.00	80	800	1.00	-	-
Glaze firing with AKZENT Plus GLAZE LT PASTE	400	6.00	80	800	1.00	-	-

The following glaze materials and stains can be used for combination, stains and glaze firing:



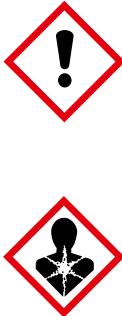
- VITA AKZENT Plus GLAZE LT POWDER
- VITA AKZENT Plus GLAZE LT PASTE
- VITA AKZENT Plus GLAZE LT SPRAY
- VITA AKZENT Plus POWDER
- VITA AKZENT Plus PASTE
- VITA AKZENT Plus SPRAY

VITA VM 11

VITA VACUMAT	Predry. °C	$\overrightarrow{\text{min.}}$	$\nearrow \text{min.}$	$\nearrow \text{°C/min.}$	T °C	$\overrightarrow{\text{min.}}$	VAC min.
First dentine firing / VITA VM 11	400	6.00	7.16	55	800	1.00	7.16
Second dentine firing / VITA VM 11	400	6.00	7.16	55	800	1.00	7.16
Stains fixation firing	400	4.00	3.45	80	700	1.00	-
Glaze firing with AKZENT Plus POWDER and SPRAY	400	4.00	5.00	80	800	1.00	-
Glaze firing with AKZENT Plus PASTE	400	6.00	5.00	80	800	1.00	-
Glaze firing with AKZENT Plus GLAZE LT POWDER and SPRAY	400	4.00	5.00	80	800	1.00	-
Glaze firing with AKZENT Plus GLAZE LT PASTE	400	6.00	5.00	80	800	1.00	-

Ivoclar Programat	B [°C]	S [min.]	$t \nearrow$ [°C/min.]	T [°C]	H [min.]	VAC 1 [°C]/ VAC 2 [°C]	L [°C]
First dentine firing / VITA VM 11	400	6.00	55	800	1.00	400 799	-
Second dentine firing / VITA VM 11	400	6.00	55	800	1.00	400 799	-
Stains fixation firing	400	4.00	80	700	1.00	-	-
Glaze firing with AKZENT Plus POWDER and SPRAY	400	4.00	80	800	1.00	-	-
Glaze firing with AKZENT Plus PASTE	400	6.00	80	800	1.00	-	-
Glaze firing with AKZENT Plus GLAZE LT POWDER and SPRAY	400	4.00	80	800	1.00	-	-
Glaze firing with AKZENT Plus GLAZE LT PASTE	400	6.00	80	800	1.00	-	-

All VITA AKZENT Plus materials can be used for characterizing VITA SUPRINITY PC restorations in combination with VITA VM 11. VITA AKZENT Plus GLAZE LT is perfectly suited to achieve natural high gloss.

<p>Safety at work and health protection</p>	<p>When working with the product, wear suitable safety goggles/ face protection and light respiratory protection.</p>	
<p>VITA AKZENT Plus BODY SPRAY / GLAZE SPRAY / GLAZE LT SPRAY / FLUOGLAZE LT SPRAY</p>	<p>Extremely flammable aerosol Spray-on ceramic glaze material. For dental applications only. Not for intraoral use. Shake well before use. Pressurized container. May burst if heated. 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 flame / hot surfaces. sources of ignition.</p>	
<p>VITA Firing Paste</p>	<p>Health hazard / Caution May cause cancer by inhalation. Causes skin irritation. For commercial use only. Wear protective gloves/protective clothing/ eye and face protection. Use personal protective equipment as required. Special treatment: remove contaminated clothing and wash before wearing again. Keep locked up. Dispose of contents/container in accordance with local/ regional/national/international regulations. Hazardous dust is formed when crushing in the dry condition (after firing).</p>	

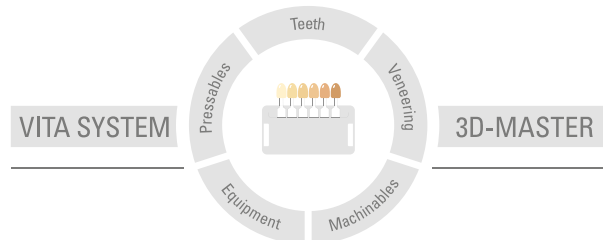
For detailed information, please refer to the respective safety data sheet.

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

⚠ 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 involve 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.

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 applications. 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 and this results in damage. The VITA Modulbox is not necessarily a component of the product. Date of issue of this information: 02.19

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

VITA Zahnfabrik has been certified and the following products bear the CE mark **CE 0124**:

VITA SUPRINITY® PC · VITAVM®11 · VITA AKZENT® Plus

Rx only

EVE Ernst Vetter GmbH, Keltern, Germany, has been certified in accordance with the Medical Device Directive and the following product bears the CE mark: **CE 0483**

VITA SUPRINITY® Polishing Set clinical

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