VITA SUPRINITY®

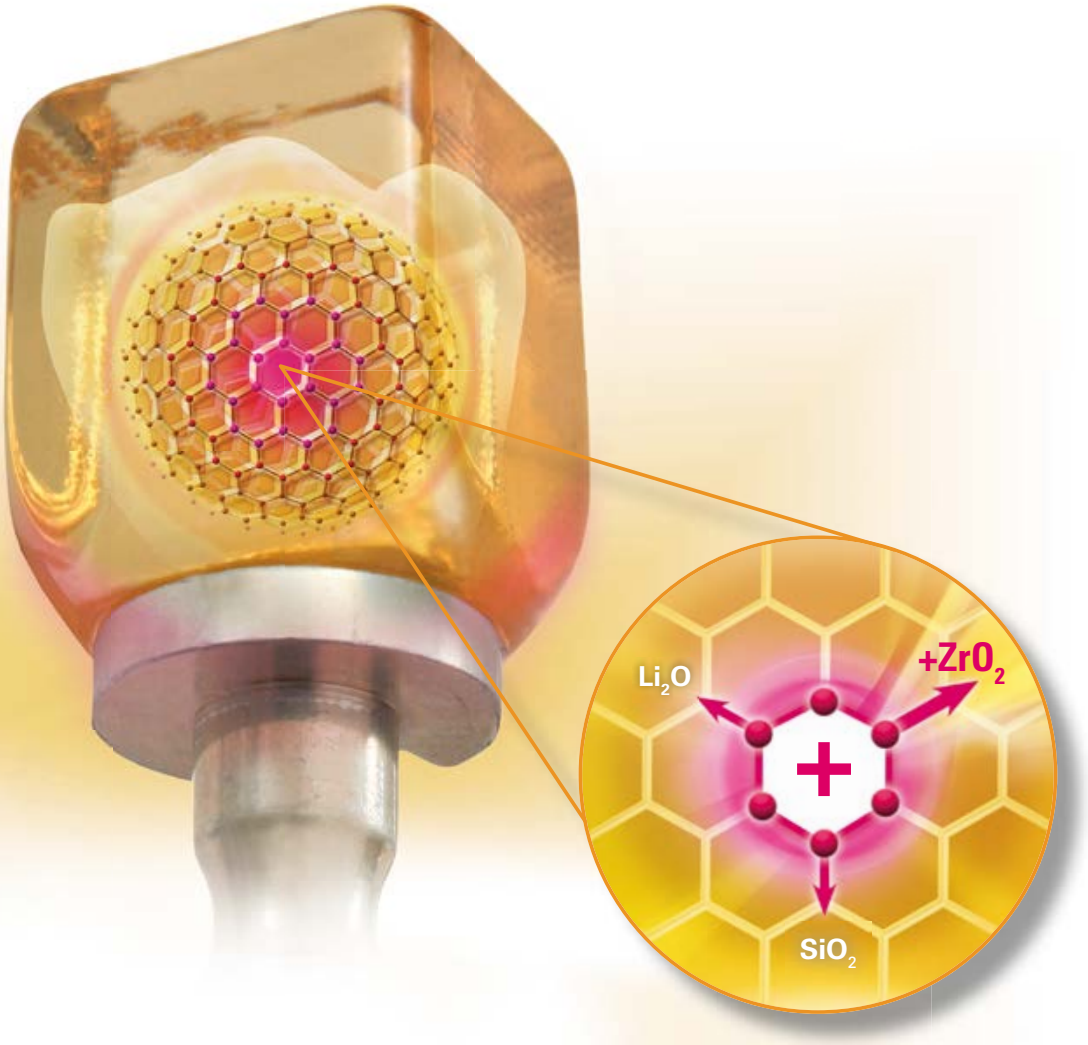
Working Instructions

VITA shade taking | VITA shade communication | VITA shade reproduction | VITA shade control

Date of issue: 11.13

VITA shade, VITA made. VITA

Zirconia reinforced lithium silicate glass ceramic (ZLS)


Li_2O
$+ZrO_2$
SiO_2

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Application area

VITA SUPRINITY 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 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. Clearance will follow once corresponding clinical tests have been carried out.

- Veneering
  Full veneers on molar crowns using veneering ceramic.

Successful processing of VITA SUPRINITY 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.

VITA SUPRINITY

Physical / mechanical properties	Unit of measure	Value
CTE	10^{-6} K^{-1}	approx. 12.3
3-point flexural strength	MPa	approx. 420
Modulus of elasticity	GPa	approx. 70
Hardness according to Vickers (HV)	MPa	approx. 7000
Chemical solubility	µg/cm2	approx. 40

Data according to ISO 6872

Components	Wt%
ZrO_2 (zirconia)	8 – 12
SiO_2 (silicon dioxide)	56 – 64
Li_2O (lithium oxide)	15 – 21
Pigments	< 10
Various	> 10

Source: Internal study, VITA

VITA SUPRINITY is available in the **translucency degrees T** and **HT** and in the **size LS-14**.
From a processing point of view, all restorations listed below can be fabricated. 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	Crowns on implants
T	●	●	○	○	●	●
HT	●	○	●	●	○	○

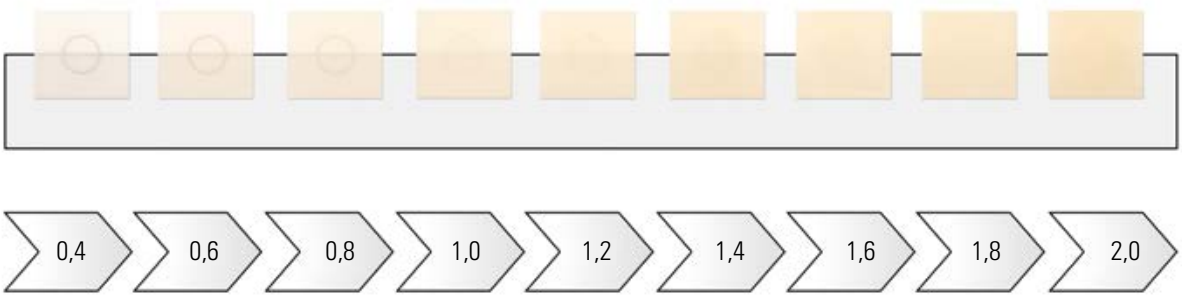
● recommended ○ possible

VITA SUPRINITY T (Translucent)
Initially, the T blocks are available in the following shades:
0M1, A1, A2, A3, A3.5, B2, C2, D2. Due to their shade which is similar to dentine, they are particularly suitable for crowns using the staining or cut-back techniques. Restorations made of T blocks excel by 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.

VITA SUPRINITY HT (High Translucent)
They are also available in the following shades: 0M1, A1, A2, A3, A3.5, B2, C2, D2. Thanks to their higher translucency, HT shades are matched to a mixture of dentine-incisal materials and particularly suitable for inlays, onlays, veneers and partial crowns. Restorations made of HT blocks exhibit natural translucency and an excellent chameleon effect.

All VITA SUPRINITY (T and HT) blocks feature natural opalescence and harmonious fluorescence to enhance the natural appearance of the restoration.
All VITA SUPRINITY restorations can be characterized with VITA AKZENT Plus by means of the staining technique.

Change of the shade effect (chroma and value)
for different layer thicknesses of the blocks:



Impact of the stump shade on a crown milled from a T block (shade A2).

VITA SIMULATE Preparation Kit

VITA SIMULATE Preparation Material

VITA SIMULATE Preparation Material is a light-curing composite used in the fabrication of artificial dies to simulate the shade of the prepared tooth. The material is used as an aid particularly when fabricating translucent all-ceramic restorations where the shade effect is strongly influenced by the shade of the stump. As the shade of the restoration can be verified in advance and corrected where required, this product enables simple and reliable reproduction of the tooth shade.

VITA VM 11 effect materials

Perfectly matched veneering material

VITA VM 11 is a low fusing fine-structure feldspar ceramic that has been developed especially for individualizing crown substructures made of zirconia reinforced lithium silicate ceramic (ZLS).
Due to its individual CTE, a separate veneering material is required for this new generation of glass ceramic. The perfectly matched CTE values of substructure and veneering materials help minimize stress to ensure very good bonding and veneering reliability that is free of warping.

VITA SUPRINITY crown individualized with VITA VM 11.

Product benefits

Highly esthetic restorations:
The high translucency and warm shades of VITA VM 11 in combination with the opalescent effect of VITA SUPRINITY create highly esthetic restorations with a vivid play of colors.

Reliable bonding:
Stress-free and reliable bonding is ensured through a perfect match of both CTE ranges.

Excellent grinding and polishing properties:
Thanks to the proven fine structure of VITA VM 11, its smooth and densely sealed surface can be easily and quickly polished.

Simple processing:
Excellent stability, minimal shrinkage and high edge stability are distinctive features of VITA VM 11. Thanks to the excellent surface wettability of VITA SUPRINITY, the new glass ceramic is suitable for multiple layering without liner firing or washbake.

Outstanding firing stability:
The outstanding firing properties of VITA VM 11 result in very high dimensional stability even after several firings.

Good surface quality:
The fine structure provides a number of benefits for dental technicians, dentists and patients alike. Thanks to the homogeneous, sealed surface, VITA VM 11 offers excellent grinding and polishing properties especially in situ to ensure smooth and perfectly sealed surfaces.

VITA VM 11 – Physical properties	Unit of measure	Value
CTE	10^{-6} K^{-1}	approx. 11.6
Softening temperature	°C	approx. 600
Transformation temperature	°C	approx. 540
Solubility in acids	µg/cm²	approx. 8
3-point flexural strength	MPa	approx. 100

Information according to ISO 6872; Source: Internal study, VITA

VITA VM 11 – Components	Wt%
SiO_2	62 - 65
Al_2O_3	8.5 - 12
Na_2O	5 - 7.5
K_2O	9 - 12
CaO	1 - 2
ZrO_2	< 1
B_2O_3	4 - 6

Source:VITA

TRANSPA DENTINE – translucent material perfectly matched with VITA SUPRINITY		OM1		
		A1		
		A2		
		A3		
		A3.5		
		B2		
		C2		
		D2		
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 materials – 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		EO1	neutral, universally suitable	
		EO2	whitish	
		EO3	bluish	
		EO5	dark violet	

SUN DENTINE – for a "sunnier" or also 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 porcelain, which is mainly used in the incisal area between 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 attention is given to the design, the better the final results and the clinical success will turn out to be.

The following basic guidelines need to be observed:

- VITA SUPRINITY 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 component and not by the VITA VM 11 layering material. We recommend a ratio of two thirds of VITA SUPRINITY to one third of VITA VM 11.
- In partially veneered restorations, the functional contacts must not be located in the transition between VITA SUPRINITY and VITA VM 11.

To achieve clinical success, the following VITA SUPRINITY 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

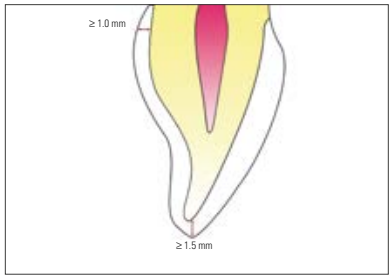
The preparation should comply with the following requirements

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

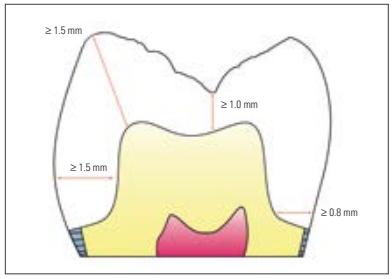


Anterior crowns

- The circumferential chamfer preparation has proven to be simple to implement and kind to ceramic in the all-ceramic technique. Moreover, 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**

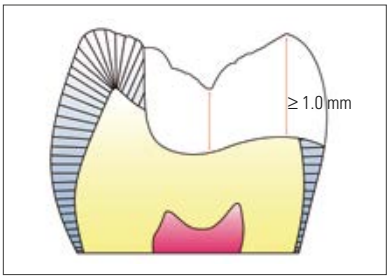


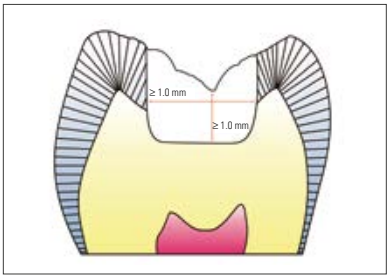
Posterior crowns

- 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 wall thicknesses:

Fissure area:	**1.0 mm**
Cusp area:	**1.5 mm**
Circumferential wall thickness:	**1.5 mm**



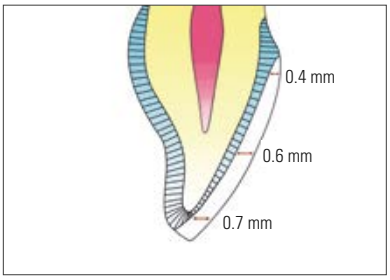


Inlays, onlays and partial crowns

- When preparing teeth for inlays, onlays and partial crowns, it is extremely important to adhere to the requirements of the ceramic material.
- Thanks to the use of 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, thereby mostly conserving 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 XL milling system

CEREC® / inLab® (Sirona):
VITA SUPRINITY can be processed with Sirona's CEREC or inLab MC XL systems, software version **V 4.2** or later.
Users of a Sirona system that does not match this system configuration should select lithium disilicate ceramic from the material menu to perform processing.

Ceramill® Motion 2 (AmannGirrbach):
The Ceramill Mind design software will be updated and available from mid 2014 for processing VITA SUPRINITY in the milling system from AmannGirrbach.

Arctica® Engine (KaVo):
VITA SUPRINITY will be included in KaVo's multiCAD Dental CAD Software from mid 2014 and can then be processed with KaVo's Arctica Engine grinding/milling machine.

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. 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.

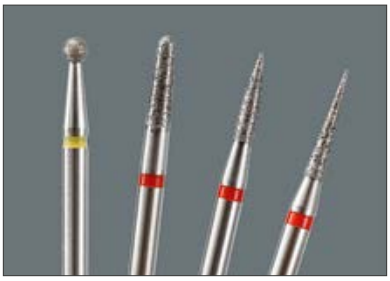
The following procedure is recommended for finishing restorations made of VITA SUPRINITY:

- Whenever possible, adjustments of VITA SUPRINITY 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 16).
- 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 Al_2O_3 or abrasive beads!

First the VITA SUPRINITY block to be used is selected based on the respective clinical situation. 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.

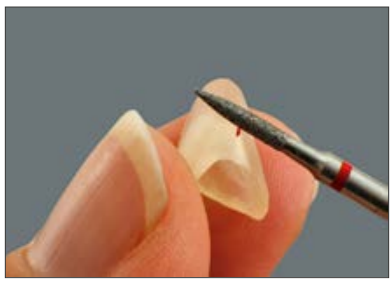


The use of suitable milling instruments is mandatory for processing VITA SUPRINITY. If unsuitable milling tools are used, chipping of the edges and local overheating may occur.

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.



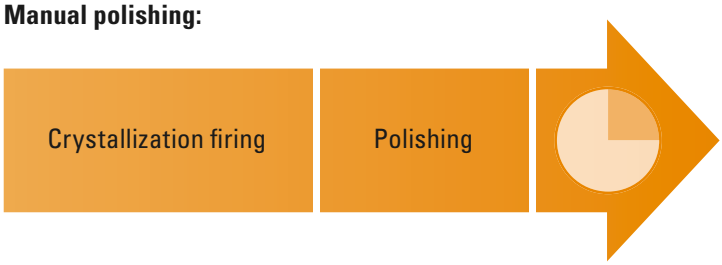
Any premature contacts are ground off carefully from the inner side of the restoration.

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).

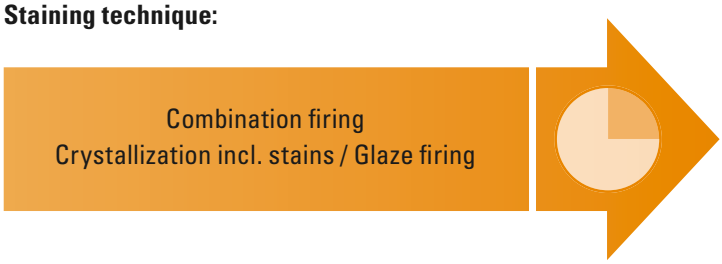
Then clean the restoration carefully.

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, 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 feature high firing stability. The firing paste, however, 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 direct contact with the restoration during crystallization, the ceramic pins need to be covered with firing paste or fibrous pad.

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 restorations.

VITA VACUMAT

Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °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.]	t1 [°C min.]	T1 [°C]	H1 [min.]	Vac. 1 [°C]/ Vac. 2 [°C]	L [°C]	tL *
400	4.00	55	840	8.00	410 / 840	680	0

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

After firing, remove the VITA SUPRINITY 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 crown.

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

VITA SUPRINITY Polishing Set technical

Reworking

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

VITA SUPRINITY Polishing Set clinical

Special 2-stage polishing assortments were developed for intraoral and extraoral polishing of VITA SUPRINITY. 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.

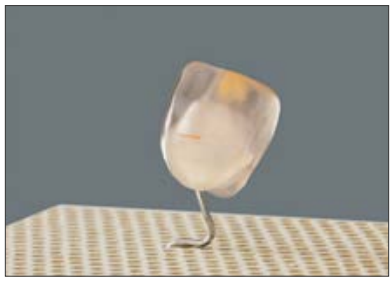
It is mandatory to avoid generation of heat during prepolishing and high-gloss polishing!
Reduced and uniform pressure must also be ensured.

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 with characterization (in this case: VITA AKZENT Plus powder).

VITA VACUMAT

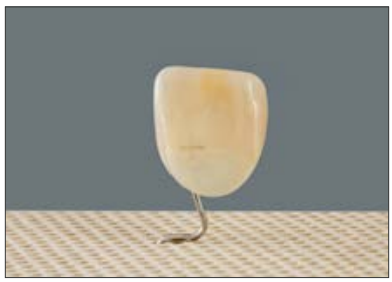
Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °C	→ min.	VAC min.	↘ °C *
400	4.00	8.00	55	840	8.00	8.00	680

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

Programat Ivoclar Vivadent

B [°C]	S [min.]	t1 [°C min.]	T1 [°C]	H1 [min.]	Vac. 1 [°C]/ Vac. 2 [°C]	L [°C]	tL *
400	4.00	55	840	8.00	410 / 840	680	0

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



Characterized VITA SUPRINITY crown after combination firing.

Alternative: VITA AKZENT Plus glaze spray

VITA AKZENT Plus glaze sprays are spray-on ceramic powder 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. Moreover 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 needs to be heard clearly.

The bottle needs to be shaken between the individual spraying processes for several restorations.
Best results are obtained with 1 to 2 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 (with characterization) - in this case: VITA AKZENT Plus GLAZE SPRAY

VITA VACUMAT

Predry. °C	⟶ min.	↗ min.	↗ °C/min.	approx. temp. °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.]	t1 [°C min.]	T1 [°C]	H1 [min.]	Vac. 1 [°C]/ Vac. 2 [°C]	L [°C]	tL *
400	4.00	55	840	8.00	410 / 840	680	0

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

Crystallized crown on the model.

Additionally, mechanical polishing of the glazed restoration can be carried out. For this purpose, e.g. 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).

VITA VACUMAT

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

Stained and fired VITA SUPRINITY restoration on the firing tray.

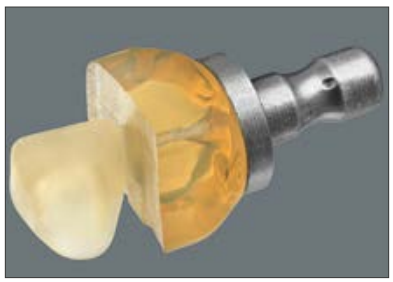
In the cut-back technique, VITA VM 11 materials are applied to the incisal or occlusal areas of the milled, reduced VITA SUPRINITY restoration. Then stains and glaze firing with VITA AKZENT PLUS is carried out.

Finishing and preparing for crystallization
The proper milling tools are required for finishing and adjusting VITA SUPRINITY 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 restorations:

- Any milling adjustment of milled VITA SUPRINITY 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.
- 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 Al_2O_3 or abrasive beads.



Milling of a VITA SUPRINITY anterior crown

To obtain sufficient space for layering on the enamel, the incisal area of the anterior restoration is reduced accordingly.

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

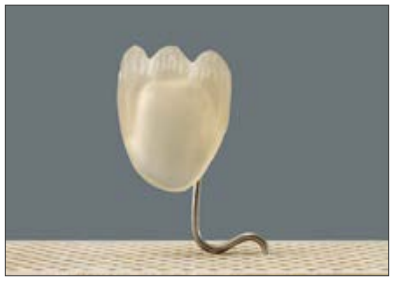
... with suitable milling instruments (manually)!

Note: Milling adjustments of VITA SUPRINITY 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 12).

⚠ Crystallization is required prior to veneering.



Crystallization

Recommended parameters for crystallization of VITA SUPRINITY

VITA VACUMAT

Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °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.]	t1 [°C min.]	T1 [°C]	H1 [min.]	Vac. 1 [°C]/ Vac. 2 [°C]	L [°C]	tL *
400	4.00	55	840	8.00	410 / 840	680	0

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

Crystallized crown.

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 even by up to 40° - from the reference value given depending on the furnace that is used and needs to be adjusted correspondingly.
When using firing pastes (e. g. VITA Firing Paste), the veneering ceramic must not come into contact with the firing paste since the liquid contained in the paste burns more slowly. In such cases, grey discoloration may occur, which can, however, be prevented by increasing the pre-drying interval from 6 to 8 minutes.

First dentine firing

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

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 decisive 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. 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 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
Temp. approx. °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.]
t1	Temperature increase rate [°C min.]
T1	Holding temperature [°C]
H1	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:

- 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.
  – When using VITA SUPRINITY 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.
  Ceramic trays and ceramic pins are not suitable since they may adhere to the restorations after firing.
- The firing parameters provided in the 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 restorations from the furnace and let them cool down to room temperature at a place protected from draft.
  Hot restorations must not be touched with metal tongs, blasted or quenched.

Crystallization and combination firing

VITA VACUMAT	Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °C	→ min.	VAC min.	↘ °C*
Crystallization firing or combination firing **with** AKZENT Plus	400	4.00	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.]	t1 [°C min.]	T1 [°C]	H1 [min.]	VAC 1 [°C]/ VAC 2 [°C]	L [°C]	tL*
Crystallization firing or combination firing **with** AKZENT Plus	400	4.00	55	840	8.00	410 840	680	0

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

The following glaze materials and stains can be used for crystallization and combination 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 BODY SPRAY
- VITA AKZENT Plus GLAZE SPRAY

VITA VACUMAT	Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °C	→ min.	VAC min.
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.]	t1 [°C min.]	T1 [°C]	H1 [min.]	VAC 1 [°C]/ VAC 2 [°C]	L [°C]
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 stains/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 BODY SPRAY
- VITA AKZENT Plus GLAZE SPRAY

VITA VM 11

VITA VACUMAT	Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °C	→ 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
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.]	t1 [°C min.]	T1 [°C]	H1 [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	-
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 restorations in combination with VITA VM 11. VITA AKZENT Plus GLAZE LT is perfectly suited to achieve natural high gloss.

VITA SUPRINITY	Adhesive bonding	Self-adhesive bonding
Veneers	●	–
Inlays, onlays, partial crowns	●	–
Anterior crowns	●	●
Posterior crowns	●	●

● recommended

Definition

- **Adhesive bonding**
  With adhesive bonding, the bond is created between the adhesive material and the restoration or the adhesive material and the hard tooth substance by chemical bonding or micromechanical retention.
  Retentive preparation is not required due to chemical bonding or micromechnical retention. To achieve bonding to the dentine or enamel, special adhesive systems are used on the prepared tooth depending on the selected bonding material. Adhesive bonding increases the total strength of the seated all-ceramic restoration.

- **Self-adhesive bonding**
  Special pretreatment of the hard tooth substance is not required for self-adhesive bonding since the bonding material features self-etching properties to the tooth, but not to the restoration. To achieve adequate adhesive forces, retentive preparation is recommended since adhesion of the restoration is only partly achieved by micromechanical or chemical bonding.

Dual-curing (e.g. VITA DUO CEMENT; VITA) or light curing adhesive composites can be used for bonding.

Conditioning the restoration

The fit of silicate ceramics should not be checked with silicone-containing try-in pastes since silicone oils remain on the surface, which are difficult to remove and affect adhesive bonding later on.
The ceramic surface must also be free from any contamination to enable successful adhesive bonding. Alcohol may be used to clean restorations that have been seated in the mouth. Then the underside of the ceramic is etched with hydrofluoric acid for 20 seconds. It must be ensured that the hydrofluoric acid is carefully applied up to the preparation border. Then the hydrofluoric acid is rinsed off with forceful water spray. Cleaning in the ultrasonic bath (1 - 3 minutes in 98 % alcohol) is recommended.

The use of a silane is recommended to improve bonding.
When using a silane, the following procedure is required:
Before the silane is applied, the ceramic surface should be dried with alcohol (98 %). A perfectly dried surface is a precondition for reliable silanization. The silane should be allowed to react for one minute and then dispersed to obtain a very thin silane coat. When using a one-component silane, the expiration date needs to be observed; a two- component silane allows the use of a freshly mixed solution for each individual application.

A light curing adhesive may (but does not have to) be applied to the ceramic restoration when using light curing composites. Light curing adhesive should not be used for this processing step when using dual-curing composites.

Procedure

Material	VITA SUPRINITY Zirconia reinforced lithium silicate glass ceramic.
Indication	Veneers, inlays, onlays, partial crowns, anterior and posterior crowns.
Type of bonding	Adhesive or self-adhesive bonding - depending on the indication (see page 37, fig. at the top). A distinction is made between dual-curing and light-curing luting composites. The dual-curing (light and chemically curing) are mainly recommended for thick and/or dark restorations and the light curing ones for restorations with thin walls (especially for veneers).
Sandblasting	-
Etching	20 sec with hydrofluoric acid gel (e.g. VITA CERAMICS ETCH).
Conditioning / silanizing	60 sec. with materials especially matched with glass ceramics.
Bonding	With bonding (adhesive) materials especially matched with glass ceramics.

Conditioning the remaining tooth substance

The most important precondition for adhesive bonding is the fact that the surfaces must be free from any contamination. If possible, exposed dentine should be sealed with a composite (dentine adhesive) already during the preparation of the teeth. Dentine that is not exposed needs to be cleaned before the adhesive system is applied. This can be perfectly achieved by sandblasting with glycine powder or aluminium oxide.

The use of bicarbonate powder, however, leads to a decrease of the bonding values in the dentine and must therefore be avoided. Alternatively, the cavity can also be cleaned with rotating brushes and the additional use of pumice powder or fluoride-free prophylaxis paste.

Procedure for conventional adhesive technique with adhesive system

The manufacturer's instructions on conditioning must be observed for the process!

- If present, etch enamel with VITA ETCHANT GEL for 30 sec. Spray clean for 30 sec and dry for 20 sec. Afterwards the etched surface must be white opaque.
- Agitate dentine primer with a disposable brush or Microbrush for 30 sec, dry with air for 15 sec.
- Agitate primer coat of adhesive for 20 sec, clean carefully for 5 sec (using air). Any excess should be soaked up. Light curing: 60 sec.

Conditioning titanium abutments

The manufacturer's instructions on conditioning must be observed!

If sandblasting of the adhesive surfaces has been approved by the manufacturer, the following procedure is required:

- Protection of the emergence profile and the screw canal (e.g. with glycerine gel)
- Sandblast the adhesive surfaces according to the respective manufacturer's instructions
- Clean thoroughly with steam jet or in the ultrasonic water bath. Avoid any contact with the adhesive surface after cleaning.
- Condition the adhesive surface for 60 sec. Then dry excess with air.

Conditioning zirconia abutments

The manufacturer's instructions on conditioning must be observed!

- Cleaning the abutment surface with alcohol (intraoral) or acetone (extraoral).
- Then apply ceramic primer according to the manufacturer's instructions.
- Then apply bonding (adhesive) material according to the manufacturer's instructions.

Geometries: VITA SUPRINITY is available in the geometry LS-14 (18 x 14 x 12 mm).

Range of shades: VITA SUPRINITY is available in the shades 0M1, A1, A2, A3, A3.5, B2, C2 and D2. Moreover all block shades are available in two translucency levels (T = Translucent and HT = High Translucent).

VITA SUPRINITY High Translucent

Shade	Design.	Geometry in mm	Content/pieces	Prod. No.
0M1-HT	LS-14	18x14x12	5	EC4S010101
A1-HT	LS-14	18x14x12	5	EC4S010130
A2-HT	LS-14	18x14x12	5	EC4S010131
A3-HT	LS-14	18x14x12	5	EC4S010132
A3.5-HT	LS-14	18x14x12	5	EC4S010133
B2-HT	LS-14	18x14x12	5	EC4S010136
C2-HT	LS-14	18x14x12	5	EC4S010140
D2-HT	LS-14	18x14x12	5	EC4S010143

VITA SUPRINITY Translucent

Shade	Design.	Geometry in mm	Content/pieces	Prod. No.
0M1-T	LS-14	18x14x12	5	EC4S010001
A1-T	LS-14	18x14x12	5	EC4S010030
A2-T	LS-14	18x14x12	5	EC4S010031
A3-T	LS-14	18x14x12	5	EC4S010032
A3.5-T	LS-14	18x14x12	5	EC4S010033
B2-T	LS-14	18x14x12	5	EC4S010036
C2-T	LS-14	18x14x12	5	EC4S010040
D2-T	LS-14	18x14x12	5	EC4S010043

VITA SUPRINITY Polishing Set clinical
The polishing set includes a total of six polishing instruments for the contra-angle: three for prepolishing and three for high-gloss polishing.

VITA SUPRINITY Polishing Set technical
The set comprises eight polishing instruments for the handpiece and includes four instruments each for pre- and high-gloss polishing.

VITA AKZENT Plus
Can be used for all dental ceramic materials independent of the CTE of the material. Available in three different forms.
PASTE: ready-to-use pastes with uniform consistency and homogeneous pigmentation.
POWDER: for unlimited flexibility and cost-effectiveness.
SPRAY: ready-to-use, easy-to-apply glaze and finishing agent stains in a spray bottle.

VITA AKZENT Plus GLAZE LT
Thanks to its lower firing temperature, GLAZE LT is perfectly suitable for glazing VITA SUPRINITY during crystallization, stains and glaze firing and in combination with VITA VM 11.
Glaze spray is used to apply a uniform and homogeneous glaze layer.

VITA VM 11 CREATIVE KIT

The effect materials of the CREATIVE KIT enable individual and highly esthetic completion of VITA SUPRINITY restorations in the cut-back technique.

VITA VM 11 DENTINE KIT

The assortment includes TRANSPA DENTINE materials that are perfectly matched with the VITA SUPRINITY block shades. Both materials feature identical translucency.

VITA LOW FUSING MODELLING LIQUID

LF LIQUID (low fusing) has been perfectly matched with veneering materials with low firing temperatures (< 850 °C) and is therefore perfectly suited for processing with VITA VM 11.

VITA INTERNO

The materials offer the ability to create in-depth shade effects. Their high fluorescence adds very high luminosity to the shades. Small quantities of the materials are mixed with the VITA VM 11 materials.

VITA VACUMAT 6000 M

The fully automatic microprocessor-controlled firing unit is ideal for all dental ceramic firing requirements. The furnace offers superb quality and a host of new features to ensure first-rate firing results, user safety, convenience and reduction of working time.

VITA classical A1-D4 shade guide
The original - for the determination of the tooth shade in the VITA classical A1–D4 shades.

VITA Easyshade Advance 4.0
VITA Easyshade Advance 4.0 is a further refinement of VITA Easyshade Advance. This digital shade measurement device allows any user 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 VITABLOC shades. Automatic activation, Bluetooth, bleaching mode and numerous other innovative features guarantee maximum precision for even greater reliability and comfort.

VITA Linearguide 3D-MASTER / VITA Toothguide 3D-MASTER
With the VITA SYSTEM 3D-MASTER you can determine the correct tooth shade swiftly and accurately. The new VITA Linearguide 3D-MASTER is an alternative to the proven VITA Toothguide 3D-MASTER and features different (linear) arrangements of the shade sample teeth.

Printed materials

VITA SUPRINITY Concept Brochure, No. 2002
VITA SUPRINITY Product Information, No. 1971
VITA SUPRINITY Product Sheet, No. 1970
VITA SUPRINITY Magazine Dental Visionist No. 1911_2
VITA SUPRINITY Expert opinions, No. 2003
VITA SUPRINITY Working Instructions, No. 1951
VITA SUPRINITY Polishing Set Product Sheet, No. 2004
VITA SUPRINITY Technical and scientific documentation, No. 2001

VITA VM 11 Product Information, No. 2005

VITA AKZENT Plus Product Information, No. 1926
VITA AKZENT Plus Working Instructions, No. 1925

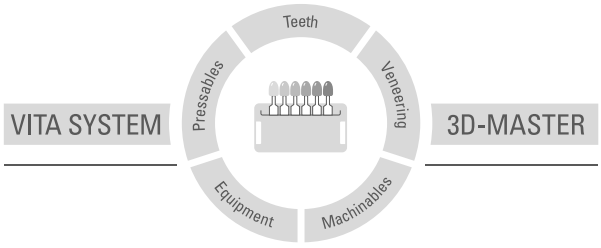
These publications and more information about VITA SUPRINITY are available at www.vita-suprinity.com

Safety at work and health protection	When working with the product, wear suitable safety goggles/ face protection and light respiratory protection.	

VITA AKZENT Plus BODY SPRAY / GLAZE SPRAY / GLAZE LT SPRAY	**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.	
VITA Firing Paste	**Health hazard** 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).	

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.

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: 11.13

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 SUPRINITY® VITA**VM®11** VITA AKZENT® **Plus**

Rx only

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