

VITA In-Ceram® YZ / VITA YZ HT

Working Instructions



VITA shade taking

VITA shade communication

VITA shade reproduction

VITA shade control

Date of issue: 04.14

VITA shade, VITA made.

VITA

Partially yttrium-stabilized zirconia
for high-temperature sintering
VITA In-Ceram YZ
VITA In-Ceram YZ Color
NEW: VITA YZ HT (high translucent)

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Aspects of material technology

Zirconia (ZrO_2) is an oxide ceramic with many significant properties, such as its translucency in the case of thin wall thicknesses, its bright color and its outstanding biocompatibility.

The material is frequently used in the field of implantology and features a high degree of crack resistance which distinguishes it among oxide ceramics.

The latter is a result of the polymorphism of zirconia. The crystal lattice is stabilized in its tetragonal high-temperature phase by means of suitable additives, e.g. yttrium-oxide which also avoids further transformation into the monoclinic phase which would otherwise automatically occur during the cooling process. Only when applying an external source of energy, as for example in the case of a beginning crack (see fig. 1), individual zirconia grains are transformed locally from their tetragonal to the monoclinic form, which is accompanied by an increase in volume of 3-5% (see fig. 1 green ZrO_2 particles). This procedure is described as transformation strengthening. The compressive stress that is formed in the structure (see arrows in fig. 1) prevents unhindered growth of a crack that would lead to the failure of the ceramic. This property is also reflected in the long life of zirconia under permanent loading.

VITA In-Ceram YZ and VITA YZ HT are porously presintered zirconia materials (see fig. 2) partially stabilized with yttrium oxide (Y-TZP, yttria stabilized tetragonal zirconia polycrystal). From this material, which is easy to process in this condition, enlarged crown and bridge substructures are milled in the CAD/CAM system.

The shrinkage which takes place during the subsequent sintering process in a special high-temperature furnace (VITA ZYrcomat / VITA ZYRCOMAT 6000 MS) is exactly calculated. The end result: substructures with a high degree of strength and marginal accuracy which feature all the advantages of the physical properties of partially stabilized zirconia. Substructures made from VITA In-Ceram YZ and VITA YZ HT are veneered with the fine-structure ceramic VITA VM 9.

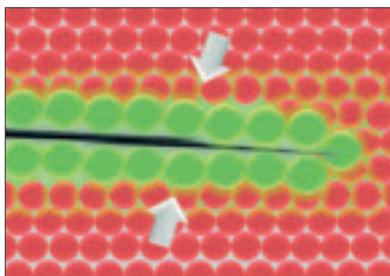


Fig. 1
Schematic diagram of the phase transformation process of ZrO_2

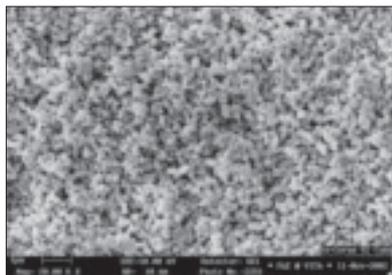


Fig. 2
SEM micrograph of the microstructure
of unsintered VITA In-Ceram YZ
(magnification x 20,000)

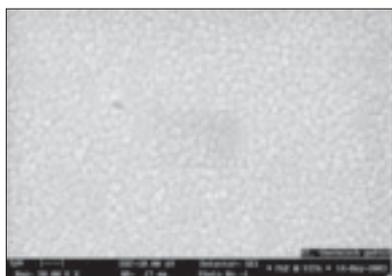
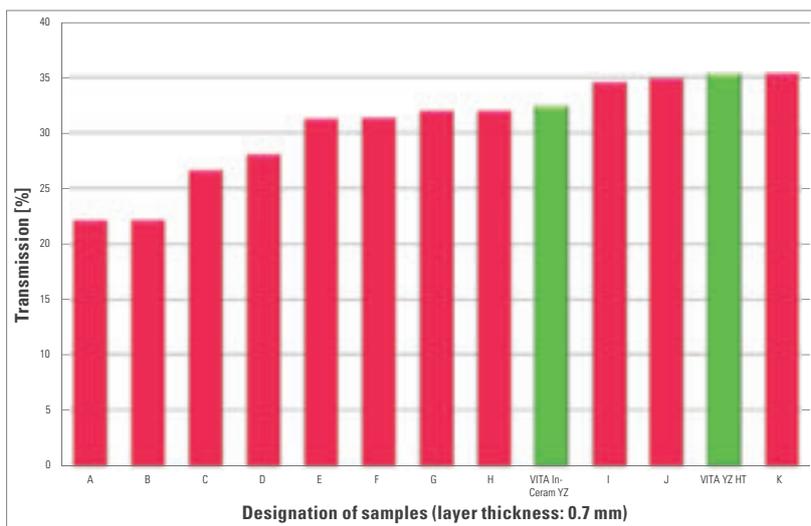


Fig. 3
SEM micrograph of the microstructure
of sintered VITA In-Ceram YZ
(magnification x 20,000)

Transmission measurements of zirconia plates



Internal study by VITA Research and Development Dept., 2013 (updated)

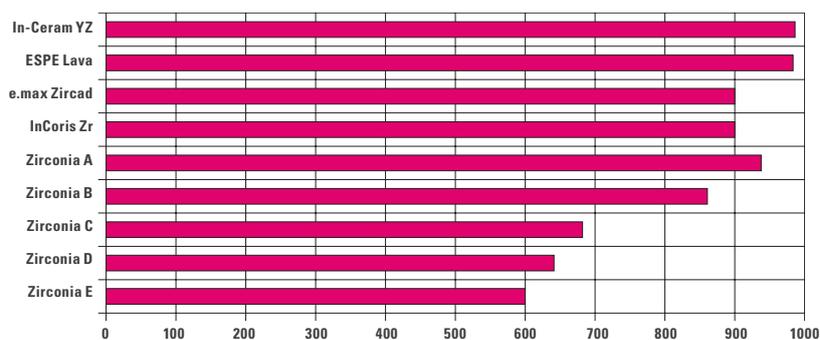
Technical data

Physical data VITA In-Ceram YZ / VITA YZ HT

Property	Unit	Value
Coefficient of thermal expansion - CTE (20 - 500°C)	10 ⁻⁶ K ⁻¹	10.5
Chemical solubility (ISO 6872)	µg/cm ²	< 20
Density after sinter firing	g/cm ³	6.05
Flexural strength (ISO 6872)	MPa	> 900

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

Flexural strength (MPa)



Study by Prof. Dr. R. Giordano, University of Boston, 2007

All-ceramic restorations made from VITA In-Ceram YZ and VITA YZ HT offer the following advantages:

High reliability / load capacity

Supreme load capacity (> 900 MPa) and excellent fracture toughness.
More than 10 years of clinical experience with VITA In-Ceram YZ.

Excellent fit/quality

The high material homogeneity ensures restorations with consistently accurate fit and without any deformation. The exact determination of the enlargement factor and the integration of the information into the bar code of the block guarantee controlled sintering shrinkage and utmost precision.

Reduced fabrication time

Manual coloring can be completely omitted through the use of the industrially precolored VITA In-Ceram YZ Color materials.

Homogeneous coloring

Industrially precolored blocks and discs ensure consistent, homogeneous coloring and consistently high and reproducible esthetics of dental restorations.

Wide indication range

VITA In-Ceram YZ and VITA YZ HT are suitable for all indications - from crown substructures to multi-unit bridge substructures (with max. 2 connected pontics). Thanks to its high translucency VITA YZ HT is perfectly suited for the fabrication of fully anatomical crowns and bridges.

General

- Tooth-colored, metal-free restorations
- Very high resistance to functional loading
- Minimally invasive restorations are possible
- Radiopaque
- Primary elements, conical and telescopic crowns
- Crown substructures in the anterior and posterior areas
- Anterior or posterior bridge substructures with max. 2 pontics
- Cantilever bridge substructures (cantilever pontic not bigger than premolar)

Advantages for fully anatomical restorations made of VITA YZ HT

- Bridge restorations in the posterior area
- Ceramic indication also when limited occlusal space is available (0.7 mm)
- Time-saving and economic fabrication

High-speed sintering

Moreover high-speed sintering of VITA In-Ceram YZ and VITA YZ HT is possible (80 minutes only). The proven material properties and quality standards of both materials remain unchanged.

Indication

VITA In-Ceram YZ	●	—	—	—	—	—	—	—	○
VITA YZ HT	●	—	—	—	—	○	○	○	●

										Veneering material
VITA In-Ceram YZ	○	○	●	●	●	●	●	●	●	VITA VM 9
VITA YZ HT	●	●	●	●	●	●	●	●	●	VITA PM 9

● recommended ○ possible

VITA In-Ceram YZ / VITA YZ HT			Minimum wall thickness in mm	Minimum connector surface ¹⁾ in mm ²⁾
Single crowns		incisal occlusal circumferential marginal	0.7 0.7 0.5 0.2	—
Anterior bridge substructures with one pontic		incisal occlusal circumferential marginal	0.7 0.7 0.5 0.2	7
Posterior bridges with one pontic		incisal occlusal circumferential marginal	0.7 0.7 0.5 0.2	9
Anterior bridge substructures with two pontics		incisal occlusal circumferential marginal	1.0 1.0 0.7 0.2	9
Posterior bridges with two pontics		incisal occlusal circumferential marginal	1.0 1.0 0.7 0.2	12
Cantilever bridges ²⁾		incisal occlusal circumferential marginal	0.7 0.7 0.5 0.2	12

¹⁾ Connector surface: connector surface abutment crown – pontic, or between 2 pontics

²⁾ Cantilever bridge unit should be modelled approx. 1/3 narrower in its vestibular/oral dimension.

Contraindication

- parafunction, such as bruxism
- in cases of inadequate oral hygiene
- inadequate results of preparation
- insufficient remaining natural tooth substance

Assortments

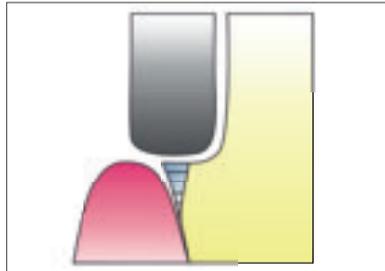
	Designation	Size*/pieces per pack	Shades	Standard pack	Large pack	CAD / CAM system
VITA In-Ceram YZ / VITA YZ HT	YZ-14	13 x 13 x 14 mm 20 pieces	– non-colored – LL1p	–	EC4YZ1420 EC4YZ14120	Holder/ Sirona
	YZ-20/15	14 x 15 x 20 mm 5/20 pieces	– non-colored – LL1p	EC4YZ205 EC4YZ201515	EC4YZ201520 EC4YZ2015120	Holder/ Sirona
	YZ-40/15	14 x 15 x 40 mm 2/10 pieces	– non-colored – LL1p	EC4YZ402 EC4YZ401512	EC4YZ4010 EC4YZ4015110	Holder/ Sirona
	YZ-20/19	15.5 x 19 x 20 mm 5/16 pieces	– non-colored – LL1p	EC4YZ20194 EC4YZ201914	EC4YZ201916 EC4YZ2019116	Holder/ Sirona
	YZ-40/19	15.5 x 19 x 39 mm 2/10 pieces	– non-colored – LL1p	EC4YZ40192 EC4YZ401912	EC4YZ401910 EC4YZ4019110	Holder/ Sirona
	YZ-55-Flip	15.5 x 19 x 55 mm 1/4 pieces	– non-colored – LL1p	ECYZ551 ECYZ5511	ECYZ554 ECYZ5514	Holder/ Sirona
	YZ-55	15.5 x 19 x 55 mm 1/4 pieces	– non-colored – LL1p	EC4YZ551 EC4YZ5511	EC4YZ554 EC4YZ5514	Holder/ Sirona
	YZ-65/25	33 x 25 x 65 mm 1/3 pieces	– non-colored – LL1p	EC4YZ65251 EC4YZ652511	EC4YZ65253 EC4YZ652513	Holder/ Sirona
	YZ-65/40s	17 x 40 x 65 mm 1 piece	– non-colored – LL1p	EC4YZ65401 EC4YZ654011	–	Holder/ Sirona
	YZ-85/40	22 x 40 x 85 mm 1 piece	– non-colored – LL1p	EC4YZ85401 EC4YZ854011	–	Holder/ Sirona
	YZ-DISC	Ø 98 x 10 mm 1 piece	– non-colored	ECYZD98101	–	without groove/ open CAD/CAM systems
	YZ-DISC	Ø 98 x 14 mm 1 piece	– non-colored – LL1/light – LL2/medium – LL3/ intense – HT	ECYZD98141 ECYZD981411 ECYZD981421 ECYZD981431 ECYZHTD98141	–	circumferential groove/ open CAD/CAM systems
	YZ-DISC	Ø 98 x 18 mm 1 piece	– non-colored – LL1/light – LL2/medium – LL3/ intense – HT	ECYZD98181 ECYZD981811 ECYZD981821 ECYZD981831 ECYZHTD98181	–	circumferential groove/ open CAD/CAM systems
	YZ-DISC	Ø 98 x 20 mm 1 piece	– non-colored	ECYZD98201	–	circumferential groove/ open CAD/CAM systems
	YZ-DISC	Ø 98 x 25 mm 1 piece	– non-colored	ECYZD98251	–	circumferential groove/ open CAD/CAM systems

*) Special sizes available on request

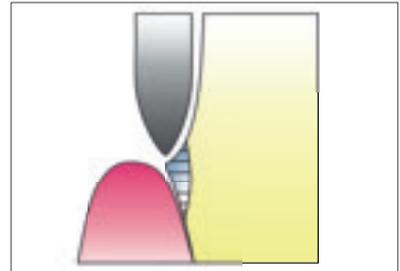
General notes on preparation

A chamfer or shoulder with a rounded inner angle are suitable. The vertical preparation angle should be at least 3°. All transitions from the axial to the occlusal or incisal surfaces should be rounded.

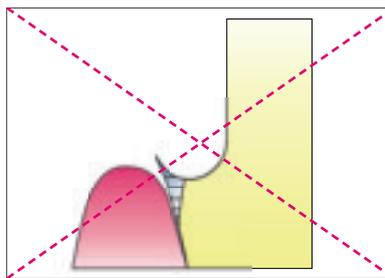
Homogeneous, smooth surfaces are recommended.



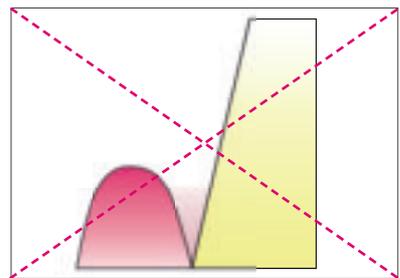
Indicated: Shoulder preparation



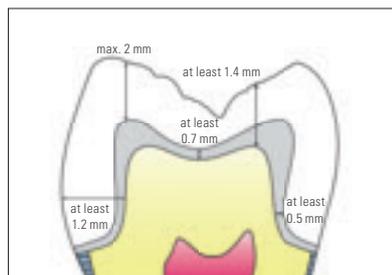
Indicated: Chamfer preparation



Contraindicated: "Gutter-shaped" preparation margin

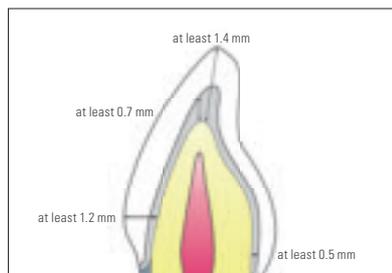


Contraindicated: Tangential preparation



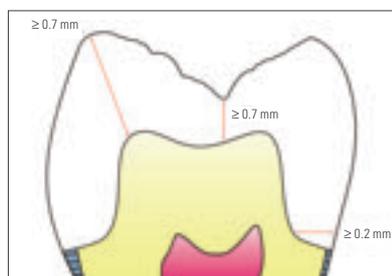
Preparation of posterior teeth (for substructure and veneer)

- Wall thickness of the complete crown - occlusal: at least 1.4 mm
Occlusal wall thickness of the substructure: at least 0.7 mm
veneer: max. 2.0 mm
- Circumferential wall thickness of the substructure: at least 0.5 mm
veneer: at least 0.7 mm
- Crown margin: at least 0.5 mm



Preparation of anterior teeth (for substructure and veneer)

- Wall thickness of the substructure - incisal: at least 0.7 mm
veneer: max. 2.0 mm
- Circumferential wall thickness of the substructure: at least 0.5 mm
veneering material: at least 0.7 mm
- Crown margin: at least 0.5 mm



Preparation of posterior teeth for fully anatomical restorations

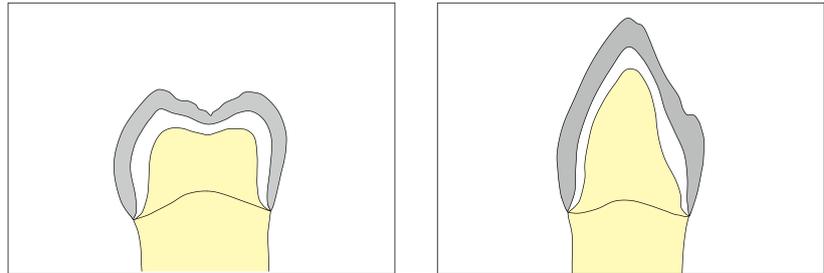
Minimum wall thicknesses - crown - in mm	
occlusal	≥ 0.7
bottom of the fissure	≥ 0.7
circumferential	≥ 0.5
marginal	≥ 0.2

Substructure design

In order to ensure lasting clinical success of restorations made of VITA In-Ceram YZ, the minimum wall thicknesses of fully anatomical and reduced restorations must be adhered to.

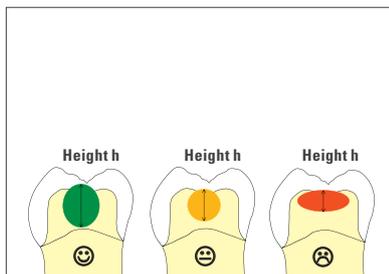
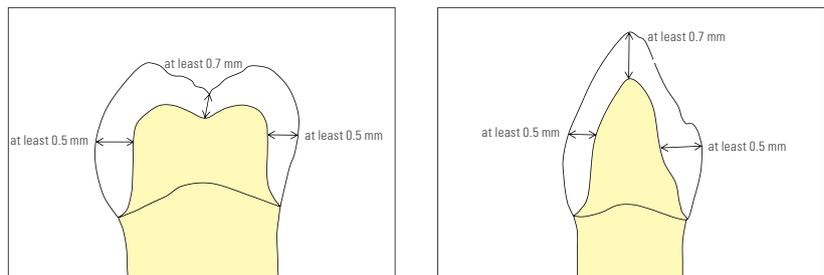
Sharp edges on the substructure should generally be avoided.

Substructure design for veneered restorations



- Reduced tooth shape
- Cusp supported
- Thickness of veneer max. 2 mm

Design of fully anatomical restorations



Aspects which should be taken into account when designing connector surfaces of bridge substructures:

1. The height h of the connector surfaces should be as large as possible.
2. The height h should be larger than, or at least equal with the width b .

The connector surfaces of bridge substructures must be concavely rounded. Sharp corners and edges are to be avoided.

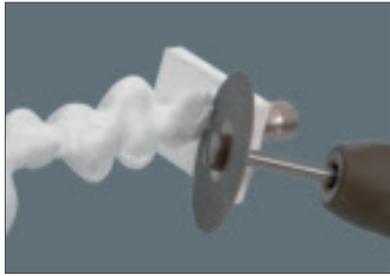
Important!

Stability and function should be given priority over esthetics.

Note on implant-supported restorations:

Depending on the fabrication process of the abutments, sharp edges may exist which may cause fracture of the respective substructures of zirconia crowns and bridges during the period of wearing.

Sharp edges must generally be avoided for ceramic restorations.



Reworking the milled restoration

After completion of the milling process and before sintering, the restoration must be cut off and ground with a diamond milling tool. The more thickly milled margins must be reduced.



Important:

Since dust is formed when grinding dental ceramic products, always wear a face mask or grind when wet.

Additionally, it is recommended to work behind a safety shield and use an extraction unit.



Depending on the software, various types of sintering supports are required for large-span bridge structures to ensure sintering without any deformation. However, if this support consists only of a remaining piece of the block/disc, the volume should be reduced to guarantee even heating up during the sintering process.



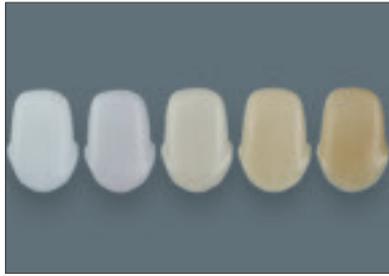
In order to facilitate high-gloss polishing of sintered fully anatomical restorations, it is recommended to smooth the milled restoration with a smoothing wheel (e.g. EVE Universal, black) or to prepolish the restoration.

Note:

Subsequent processing of the sintered substructure should generally be avoided.

The surface structure of ceramic materials is decisive for their flexural strength. Subsequent processing of sintered VITA In-Ceram YZ and VITA YZ HT restorations with abrasive instruments is to be avoided, particularly in the connector area of bridges.

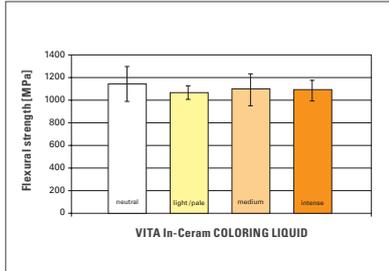
Mechanical surface processing may cause damage to the structure in the sintered condition. This can lead to phase transformation over a large area of the ZrO_2 , and to surface tensions due to distortion of the crystal lattice and to cracks and late cracks in the veneer after seating the restoration. Therefore, surfaces that are to be individualized with VITA VM 9 (layering technique) must not be sandblasted.



Coloring the substructures with VITA In-Ceram® YZ COLORING LIQUID

Application area

Liquid for complete or partial coloring of milled VITA In-Ceram YZ substructures before sintering. YZ COLORING LIQUID is available in 4 different colors and matched in a way to enable the reproduction of all VITA SYSTEM 3D-MASTER and VITA classical A1–D4 shades with the VITA VM 9 veneering material.



Please observe the information on the following pages.

Note:

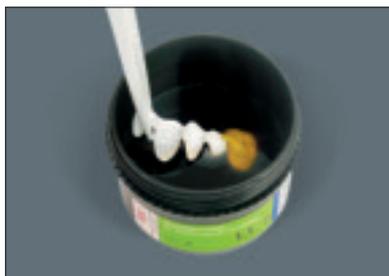
The physical material properties, such as flexural strength, fracture toughness, Weibull modulus and coefficient of thermal expansion are not adversely affected by the use of the YZ COLORING LIQUIDS.

Use

Make sure that the surface of the restoration is not too smooth in order not to affect the penetration of the Coloring Liquid. To achieve consistent coloring results, any dust or grease must be removed from the substructure before use. Then a cleaning cycle in a dental furnace is required to remove coolants or lubricants from the porous structure.

Cleaning firing in the VITA VACUMAT®

Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. Temp. °C	→ min.
500	3.00	6.00	33	700	5.00



The restoration is immersed in the coloring liquid according to the shade to be reproduced. The substructure is placed in the liquid in a way to avoid bubbles and to ensure complete coverage with liquid. The recommended immersion time is 2 minutes. When immersing the substructure, vacuum or pressure (2 bars) can be used additionally.

Subsequently remove excess YZ COLORING LIQUID with a paper tissue. Make sure to avoid puddles in gaps. Then leave to dry for a short period. Do not sinter in wet condition!

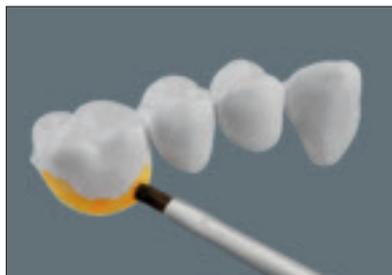
Observe special information for high speed sintering.

Color classification

The basic colors light/pale and medium are matched with the shade reproduction with VITA VM 9.

COLORING LIQUID	VITA SYSTEM 3D-MASTER	VITA classical A1–D4
light/pale	1M1, 1M2 2L1.5, 2M1, 2M2, 2M3, 2R1.5 3M1 4M1	A1, B1, C1
medium	2L2.5, 2R2.5 3L1.5, 3L2.5, 3M2, 3M3, 3R1.5, 3R2.5 4L1.5, 4L2.5, 4M2, 4M3, 4R1.5, 4R2.5 5M1, 5M2, 5M3	A2, A3, A3.5, A4 B2, B3, B4 C2, C3, C4 D2, D3, D4

* The additional color intense is used for making the two basic colors more intensive (more chromatic). The additional color neutral is used to reduce the intensity of the two basic colors (less chromatic). Both colors can also be used in their pure form: intense to achieve a very high degree of shade intensity; neutral, e.g., to decrease the lightness of VITA In-Ceram YZ. The shade results in combination with VITA VM 9 may differ significantly from the shade sample.



For individual characterization, YZ COLORING LIQUID can also be applied in a thin, homogeneous layer with a brush onto the areas of the restoration to be colored. The substructure can be colored from within and without at the margins in order to ensure complete penetration of the color.

Important information:

The application brush should only be used for the application of YZ COLORING LIQUID. Do not use for layering the ceramic: danger of discoloration! Clean the brush only with distilled water. The brush should not contain any metal to avoid reactions.

Please also observe the instructions for use of the VITA In-Ceram YZ COLORING LIQUIDS.

Coloring substructures made of VITA YZ HT

The following liquids (among others) can be used for coloring VITA YZ HT:

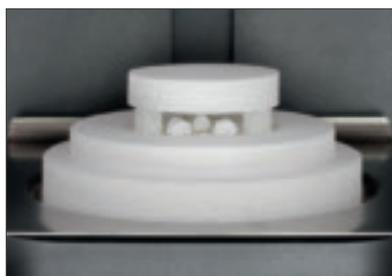
- Colour Liquid Prettau® Aquarell, Zirkonzahn
- Lava™ Plus Dyeing Liquid, 3M ESPE



To ensure unhindered burning out of organic components of the coloring liquids, restorations colored with YZ COLORING LIQUID must be sintered in the VITA ZYrcomat T in a crucible with an air vent (Prod. No. E38011 / E38014).



Restorations that are sintered in the VITA ZYRCOMAT 6000 MS need to be sintered with the MS sintering dish (Prod. No. E38015).



Note:

Restorations colored with YZ COLORING LIQUID can be sintered in the high-speed mode in the VITA ZYRCOMAT 6000 MS. Prior to sinter firing, predrying of the colored restorations is mandatory. Only the MS sintering dish may be used in the high-speed mode. To prevent possible contamination of the restorations and the furnace chamber in the high-speed mode and to avoid affecting the shade result, we recommend the use of a sintering lid during each sintering process.



Sintering in the high speed sintering furnace VITA ZYRCOMAT 6000 MS

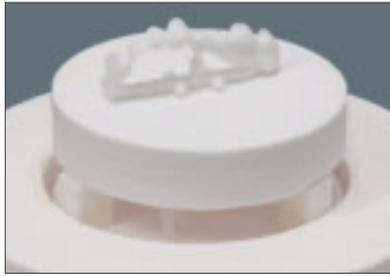
The VITA sintering programs are prestored under the YZ material key.

The following programs can be selected:

- Universal program: conventional sintering in 7 h 20 min (incl. cooling down)
 - YZ Universal (1530 °C)
 - YZ HT Universal (1450 °C)
- Speed program: High speed sintering in 80 min (incl. cooling down)
 - YZ Speed (1530 °C)
 - YZ HT Speed (1450 °C)
- Pre-Dry program: predrying the restorations when using Coloring Liquids in the high-speed mode.
 - YZ Coloring Liquids
 - YZ HT Coloring Liquids

Please note: Place the special MS sintering dish in the center of the recess on the firing tray.

⚠ IMPORTANT: During high speed sintering, "two-storied" sintering by stacking crucibles and the sintering dishes is not possible!

**Note:**

Bridges with up to 7 units can be sintered in the MS sintering dish. Bridges or bridge substructures with 8 to 14 units are placed directly in the center of the firing tray without sintering dish and sintering beads using the corresponding sintering supports (according to the instructions of the manufacturer of the system or software).

**General information on sintering in high-temperature furnaces**

Place anterior crown substructures into the sintering dish with the labial or lingual surface facing downward; ideally, anterior bridge substructures should be placed on the incisal surface and posterior crown and bridge substructures with the occlusal surface facing downward. It is recommended to sinter bridge substructures in the sintering dish. Make sure that the entire surface of the substructure is supported by the firing support to avoid deformation.

Care should be taken to prevent sintering beads from becoming "jammed" in the connector areas.

The fit of the substructure can be checked after a sintering process and a cooling phase of approx. 10 min.

Important

VITA In-Ceram YZ and VITA YZ HT can be sintered in all high-temperature furnaces, which can be operated with the sintering parameters indicated above. The user must observe the respective instructions of the furnace manufacturer.

VITA does not grant a warranty or accept any liability for damage resulting from sintering VITA In-Ceram YZ and VITA YZ HT in furnaces of other manufacturers.



Sintering in the high-temperature furnace VITA ZYrcomat T

- Switch on the furnace and control unit.
- Use the lift key to lower the lift completely.
- Place the sintering dish in the center of the firing tray and cover with sintering crucible. "Two-storied" sintering by stacking crucibles and the sintering dishes is possible (see fig.).
- Close the lift using the lift key. Hold the key pressed until the firing chamber is completely closed.
- Press "START" key to start the sinter firing.
- The sintering program will then run automatically: Duration of the program cycle including cooling down to 200 °C: approx. 7.5 h.

Sintering parameters

The sintering program for VITA In-Ceram YZ has been predetermined:

- Rising time: 1.5 h
- End temperature: 1530 °
- Holding time at end temperature: 2 h
- Cooling down to 400 °C with firing chamber being closed (lift key can only be operated from a temperature of 400 °C)

The sintering program for VITA YZ HT can be entered in the following way:

- Rising time: 1.5 h
- End temperature: 1450 °C
- Holding time at end temperature: 2 h
- Cooling down to 400 °C with firing chamber being closed (lift key can only be operated from a temperature of 400 °C)

Note

Do not open the furnace until the temperature is below 200 °C!
This will increase the service life of the sintering dish and the crucible.



Reworking and surface treatment after sintering

Milled restorations should preferably be adjusted before sintering. However, if reworking is required, the following basic aspects need to be observed:

- Corrections need to be made with diamond instruments for wet grinding under water cooling and at a low pressure.
- Use new fine-grained diamonds with red color coding (fine = 27-76 µm) or less (extra-fine, yellow 10-36 µm or ultra-fine, white 4-14 µm).
- It is also possible to process the substructure using soft, diamond-coated rubber polishers and a handpiece with slow speeds and low pressure. Make sure to use only PU-bonded (polyurethane) polishers. Residues of these polishers can be easily removed and burn out without leaving any residue.
When using silicone-bonded polishers, it may be impossible to remove abraded silicone. This may impair the bonding area towards the veneering material.
- The instrument must lie flat on the surface and chattering must be avoided.

⚠ To avoid phase transformation, surfaces to be veneered must not be sand-blasted.

Important:

After grinding we recommend thermal treatment (regeneration firing) of the substructure to reverse any phase transformations on the surface.

⚠ Any microcracks which have arisen cannot be regenerated.

Predry. °C	$\frac{\text{---}}{\text{min.}}$	$\frac{\text{---}}{\text{min.}}$	$\frac{\text{---}}{\text{°C/min.}}$	approx. Temp. °C	$\frac{\text{---}}{\text{min.}}$	VAC min.
500	0.00	5.00	100	1000	15.00	–

Recommendation for surface treatment of fully anatomical VITA In-Ceram YZ or VITA YZ HT restorations

- Double glaze layer; previously high-gloss polishing of areas/surfaces which are in occlusion is required
- Occlusal cut-back and individualization with VITA VM 9 materials (layering technique)

Why is glazing recommended?

High-gloss polished zirconia does not cause loss of substance (= abrasion) on the antagonist and is not abraded by the antagonist either. Abrasion, however, always occurs in the natural dentition. By applying a glaze layer to the zirconia, natural abrasion is imitated. This way premature contacts in the zirconia restoration are avoided.

VITA AKZENT Plus GLAZE or BODY Spray are recommended for glazing.



Base material: white VITA In-Ceram YZ / VITA YZ HT

The BODY SPRAY stains can be used to adapt the zirconia material to the remaining teeth.

Their use enables shade approximation in the lightness levels 1 and 2 for white VITA zirconia.

The shade results shown below were produced using two layers of BS.

To obtain shade results with even higher intensities, additional layers of BS can be sprayed on.

For lightness level 3 or higher, the use of a precolored block or manual coloring of the restoration prior to sintering is recommended.



BS01 (yellowish)



BS02 (yellowish-brownish)



BS03 (orange)



BS04 (olive-greyish)



BS05 (greyish-brownish)

Recommended firing temperature

	Predry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.	↘ °C
VITA In-Ceram YZ / VITA YZ HT	500	4.00	5.37	80	950	1.00	–	–



High-gloss polishing

Careful high-gloss polishing of the occlusal surface is always urgently required for the overall functional effect of the restoration since the surface roughness of unpolished zirconia causes increased loss of substance (abrasion) on the antagonist. High-gloss polished zirconia, however, does not cause any loss of substance on the antagonist since it does not have abrasive properties and even resists plaque.*)

High-gloss polishing is also recommended before characterization of the shade (staining technique).

Reason: If the ceramic that has been fused to the substructure is subject to abrasion or has been ground off, the zirconia is exposed. If it is polished to high gloss, it will not have any abrasive properties.



Note

We recommend the use of the VITA SUPRINITY Polishing Sets technical and clinical for high-gloss polishing.

- VITA SUPRINITY Polishing Set technical (extraoral) with instruments for the handpiece
- VITA SUPRINITY Polishing Set clinical (intraoral) with instruments for the contra-angle

These sets are particularly suitable for efficient and time-saving polishing of VITA SUPRINITY restorations and, thanks to the PU-free material, they are perfectly suited for polishing fully anatomical zirconia restorations.

The polishing sets include all instruments for well-coordinated polishing (technical: extraoral; clinical: intraoral).

1. Prepolishing the ground areas/surfaces with the special diamond-coated, pink rubber polishers of the VITA SUPRINITY Polishing Set technical/clinical at a speed of 7,000 – 12,000 rpm.
2. High-gloss polishing is subsequently carried out with the diamond-coated, grey rubber polishers at a reduced speed of 4,000 – 8,000 rpm.

It is mandatory to avoid generation of heat!

*) Abrasion tests, University Clinic of Regensburg, PD Dr. Rosentritt
Report: Verschleißuntersuchungen an keramischen Werkstoffen (Abrasion tests of ceramic materials);
Report No. 219_3; 02/2013



Veneering with VITA VM 9

Substructures made of VITA In-Ceram YZ and VITA YZ HT are veneered with VITA VM 9 fine-structure veneering material [CTE (25-500°C) $9.0-9.2 \cdot 10^{-6} \cdot K^{-1}$].

YZ COLORING LIQUID is used for coloring milled VITA In-Ceram YZ substructures and has been matched for shade reproduction with VITA VM 9.

For information on veneering non-colored zirconia substructures and on veneering with VITA VM 9 refer to the Working Instructions VITA VM 9, No. 1190.

Scientific studies and ongoing market observation have formed the basis of VITA Zahnfabrik's recommendation for decades in order to offer customers the best possible solution for dental restorations. New results confirm that great care is required particularly when veneering and processing zirconia substructures. As a result, the following procedures are recommended in order to offer even more safety:

As a result of the poor thermal conductivity of both materials (Y-TZP and veneering ceramic), higher residual stress can occur in this compound system than is known in the case of metal ceramics.

This residual thermal stress in the veneering ceramic, in particular in the case of large restorations, can be counteracted by means of slow cooling to below the transformation temperature of the veneering ceramic during the last firing cycle (approx. 600°C for VITA VM 9). Such a firing procedure with expansion cooling is well known as a metal ceramic technique to dental technicians; a step of this nature is necessary to reduce tension in the case of some gold alloys.



Alternatively, VITA PM 9 can be pressed onto VITA In-Ceram YZ and VITA YZ HT substructures.

VITA PM 9 was developed from the proven fine-structure ceramic VITA VM 9 and is used for overpressing of ZrO_2 substructures in the CTE range of approx. $10.5 \cdot 10^{-6} \cdot K^{-1}$, such as VITA YZ HT substructures, as well as for the fabrication of inlays with one or more surfaces, onlays, partial crowns, veneers and anterior crowns by means of the substructure-free staining and layering technique. Please observe the information in the Working Instructions VITA PM 9, No. 1450.

Extended firing program for VITA VM 9

	Predry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	↘ °C	→ °C	VAC min.
Cleaning firing	500	3.00	6.00	33	700	5.00	–	–	–
Regeneration firing	500	0.00	5.00	100	1000	15.00	–	–	–
BASE DENTINE Wash firing	500	2.00	8.11	55	950	1.00	–	–	8.11
MARGIN firing	500	6.00	8.21	55	960	1.00	–	–	8.21
EFFECT LINER firing	500	6.00	7.49	55	930	1.00	–	–	7.49
1st dentine firing	500	6.00	7.27	55	910	1.00	600*	–	7.27
2nd dentine firing	500	6.00	7.16	55	900	1.00	600*	–	7.16
Glaze firing	500	0.00	5.00	80	900	1.00	600*	–	–
Glaze firing VITA AKZENT Plus	500	4.00	5.00	80	900	1.00	600*	–	–
Corrective firing with COR	500	4.00	4.20	60	760	1.00	500*	–	4.20

* Long-term cooling down to the respective temperature is recommended for the respective **last** firing cycle of the veneering ceramic; the lift position for VITA VACUMAT furnaces should be > 75%. Firing object must be protected against direct supply of air.

More information on the subject of all-ceramic materials:

M. Kern, P. Pospiech, A. Mehl, R. Frankenberger, B. Reiss, K. Wiedhahn, K.H. Kunzelmann: „Vollkeramik auf einen Blick“

Leitfaden zur Indikation, Werkstoffauswahl, Vorbereitung und Eingliederung von vollkeramischen Restaurationen;

5. aktualisierte Auflage; Herausgeber im Eigenverlag: Arbeitsgemeinschaft für Keramik in der Zahnheilkunde e.V., 76255 Ettlingen;

ISBN 3-00-017195-9

Temporary bonding of fully anatomical restorations

Fully anatomical VITA In-Ceram YZ restorations can be bonded temporarily since they exhibit high inherent strength and there is no risk of damaging the veneer when removing the restoration prior to permanent bonding.

Care should be taken and tension must be avoided when removing the restoration, e.g. use so-called bite pads. Once they are heated, these bite pads provide good adhesion and ensure uniform distribution of the retention force to the restoration when it is removed by the dentist.

Basically, all suitable or approved temporary bonding materials can be used for temporary bonding. Please observe the corresponding instructions for use.

However, if it is intended to carry out permanent bonding using the adhesive technique, eugenol-free cements must be used, since residues of eugenol-containing materials adversely affect the polymerization of adhesive composites.

Mechanical cleaning (e.g. with pumice or sandblasting with corundum) and cleaning with alcohol are required for the inner surfaces of the restoration prior to definitive bonding.

Permanent bonding of fully anatomical restorations

We recommend to sandblast the adhesive surfaces for 5-10 sec. with Al₂O₃ (max. 50 µm) at a pressure of < 2.5 bar.

The following types of bonding materials are recommended for high-strength oxide ceramics (flexural strength > 350 MPa) which cannot be etched with hydrofluoric acid gel and need to be sandblasted with Al₂O₃ prior to bonding:

- Glass ionomers
- Composites

We recommend the use of materials which contain a phosphate monomer, especially for composites. It will create a chemical bond between the zirconia surface sandblasted with corundum and the composite. Additionally, self-adhesive composites are also suitable.

Note

Please observe the working instructions of the manufacturers of the corresponding products.

Removal / trepanation of seated zirconia restorations

The use of cylindrical diamond instruments under maximum water cooling and a speed of 120,000 rpm is recommended for removing a fixed zirconia restoration. The restoration can then be trepanated with a coarse-grained spherical or cylindrical diamond under maximum water cooling at a speed of approx. 140,000 rpm. When drilling through the restoration, it is recommended to hold the instrument at an angle of 45°.



Assortments, accessories and equipment

Accessories for sintering

Pack cont. 150 g of ZrO₂ beads to support the restorations during the sintering process

Prod. No.
E38002



- Set of sintering dish and sintering crucible, small, Ø 74 mm E38011
- Set of sintering dish and sintering crucible, large, Ø 92 mm E38014
- Single pack of sintering dish, Ø 74 x 10 mm E38006
- Single pack of sintering crucible, Ø 80 x 30 mm E38011
- Single pack of sintering dish, Ø 92 x 13 mm E38012
- Single pack of sintering crucible, Ø 100 x 35 mm E38013



Sintering dish MS, Ø 70 mm E38015



VITA In-Ceram YZ COLORING LIQUID

Coloring liquids (4 pieces) for complete or partial coloring of milled VITA In-Ceram YZ substructures prior to the sintering process. They have been matched in a way to enable the reproduction of all VITA SYSTEM 3D-MASTER and VITA classical A1–D4 shades with VITA VM 9 veneering material.

The basic colors light/pale and medium are used for the actual reproduction of the shade. Users can increase or reduce the intensity of the basic colors with the additional colors intense or neutral.

Complete set	4 x 100 ml	ECYZCLKIT
light/pale coloring set	1 x 250 ml	ECYZCLKIT250
medium coloring set	1 x 250 ml	ECYZCLMKIT250
intense coloring set	1 x 100 ml	ECYZCLIKIT100
neutral coloring set	1 x 100 ml	ECYZCLNKIT100



VITA VM 9 veneering material

Fine-structure veneering material for all-ceramic substructure materials in the CTE range of approx. $10.5 \cdot 10^{-6} \cdot K^{-1}$.



VITA PM 9

ceramic system, also for overpressing of partially yttrium-stabilized zirconia substructures in the CTE range of approx. $10.5 \cdot 10^{-6} \cdot K^{-1}$.



VITA ZYRCOMAT 6000 MS

The high speed sintering furnace is suitable for all high-temperature sinter firings of all dental ceramic substructure materials, such as ZrO_2 and Al_2O_3 and can sinter bridge substructures with up to 14 units or fully anatomical restorations within just 80 minutes at $400^\circ C$ thanks to a controlled cooling phase. (Please observe the information on pages 16 and 17 and in the Working Instructions, No. 1859).



VITA ZYrcomat T

High-temperature sintering furnace for sinter firing VITA In-Ceram YZ and AL. 4 molybdenum silicate thermocouples ensure homogeneous temperature distribution. Temperature in the firing chamber: max. $1600^\circ C$.

Subject of the study

Clinical reliability

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Indication

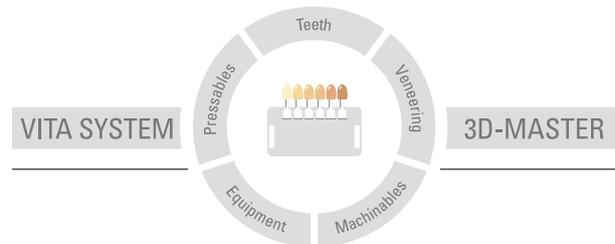
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Information

<p>Personal protective equipment</p>	<p>When working with the product, wear suitable safety goggles / face protection, gloves and safety clothing. Since dust is formed when grinding sintered dental ceramic products, always wear a face mask or grind when wet. Additionally, it is recommended to work behind a safety shield and use an extraction unit.</p>	
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With the unique VITA SYSTEM 3D-MASTER all natural tooth shades are systematically determined and completely 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: 04.14

After the publication of these working instructions 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  0124:

VITA In-Ceram® YZ · VITA YZ HT · VITAVM®9 · VITAPM®9

VITA In-Ceram® YZ COLORING LIQUID for VITA In-Ceram® YZ

Rx Only

VITA

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