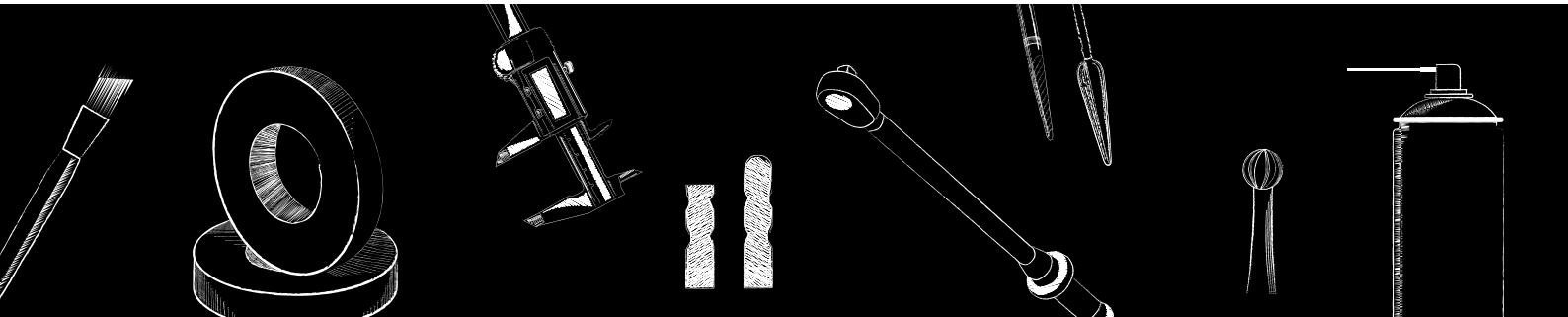
pritidenta®
MEMBER OF IMES-ICORE® GROUP

priti® tips

# Step by step to the perfect result with the priti®multidisc $ZrO_2$



Trust starts with a priti smile.


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# Fastening of the disc

Objective: Prevent chipping

## You will need:



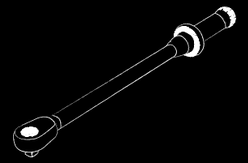
priti®multidisc



CNC machine
quick release ring

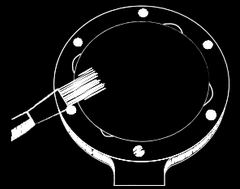


Brushes



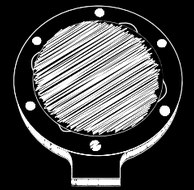
Torque wrench

## (A) Cleaning disc holder (lower clamping ring)



Use a brush to clean the disc mount thoroughly to prevent any unevenness

## (B) Position the blank in the disc holder (lower clamping ring)



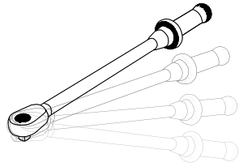
## (C) Secure the ring using a quick-release clamp (upper clamping ring)

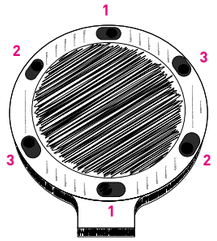




## (D) Tighten

**Tightening torque:**
0.1–0.3 Nm
(For heavily milled discs, use 0.1 Nm.)



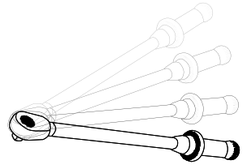


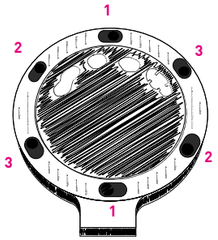

**Step 1:**

50% 1 & 50% 1
50% 2 & 50% 2
50% 3 & 50% 3

**Step 2:**
Repeat the first step and tighten.

## (E) Loosen






**Step 1:**

50% 1 & 50% 1
50% 2 & 50% 2
50% 3 & 50% 3

**Step 2:**
Repeat the first step and remove.

# The correct CAD/CAM settings for pritidenta restorations

## Objective: Perfect milling results

### You will need:



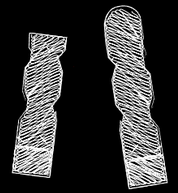
priti®multidisc




Software



Milling machine for open (98.5 mm) and validated systems



High-quality milling tools, ideally with a diamond coating

## (A) Construction

The correct settings in the CAD software:

**PRITI® TIP**

**Please ensure to observe these parameters and replace the milling tools regularly.**

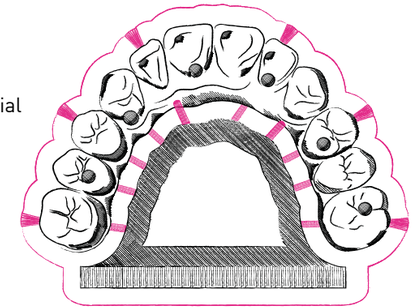
| Parameter to be considered in the design of the systems: | | Crowns | Maryland-Bridges | Bridges |
|---|---|---|---|---|
| Minimum framework thickness | previous | 0.4 mm | 0.4 mm | 0.6 mm |
| | rear | 0.6 mm | 0.6 mm | 0. 6 mm |
| Connectors | previous | - | 6 mm² | 6 mm² |
| | rear | - | 9 mm² | 9 mm² |
| Framework design | Anatomical tooth shapes (to support veneering ceramics); Full anatomical contour | | | |



## (B) Preparation for milling

The correct settings in the CAM software:

1. Select the appropriate machining strategy according to the type of material
2. Optimal nesting
3. If required, design a sinter support



## (C) Milling

We recommend dry machining.

# How to sinter correctly: Step by Step

## Optimal preparation and programming of the furnace

### You will need:



PTC-Ring



priti®clean
cleaning powder

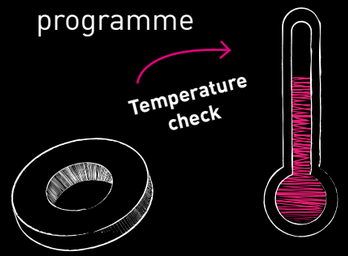


Sintering tray
with lid



priti®pearls/granules

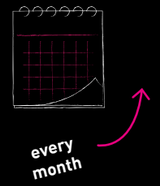
### (A) Check the programme




### (B) Clean your furnace regularly with priti®clean




**When changing the pearls/granules**




### (C) Prepare the sintering tray



**If coloring liquids have been used, we recommend cleaning the furnace and changing the pearls/granules.**



## priti® Sintering programmes

| | Standard 7 hours | Fast sintering 4 hours | Speed sintering 1 hour |
|---|---|---|---|
| Heating rate | 8-10°C/min. | 10°C/min. | 99°C/min. |
| Final temp. | 1,450°C | 1,500°C | 1,550°C |
| Holding time | 120 min. | 30 min. | 5 min. |
| Rate of cooling | 8-10°C/min. | 40°C/min. | 40°C/min.* |
| Restrictions | none | Bridges with a maximum of 3 units | For single crowns made from priti®multi-disc $ZrO_2$ Extra Translucent only |

For MTP speed sintering programmes, please see the instructions on the Speed Sintering fact sheet.

* Allow the furnace to cool down to 800°C, open the door at 750°C

## Alternative preset sintering programmes

| | ZIRKONZAHN 8 hours | ZIRKONZAHN 4 hours 40 minutes | Amann Girrbach 8 hours |
|---|---|---|---|
| Programme | ICE Standard | ICE Speed | Programm 1 |
| Final temp. | 1,500°C | 1,500°C | 1,500°C |
| Holding time | 120 min. | 60 min. | 120 min. |
| Restrictions | none | Bridges with a maximum of 3 units | none |



### PRITI® TIP

**priti likes to be alone in the furnace! Sintering it at the same time as $ZrO_2$ from other manufacturers may affect the color.**

## Large restorations call for great care!

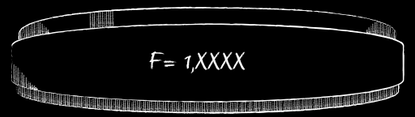
1. 8°C/min. heating and cooling rate
2. Do not open the furnace until it has reached 300°C
3. Do not remove the lid of the tray until you can do so by hand
4. Do not place the item on metal
5. Do not touch it with metal (tweezers)

# Nesting

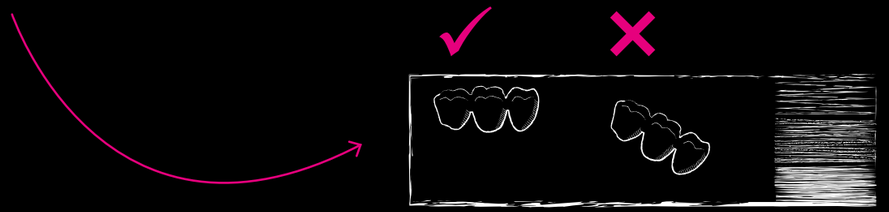
## Objective: A smooth manufacturing process

### (A) Determine the scaling factor

An individual scaling factor (F) is printed on each disc.
This value is entered into the CAM software.




### (B) Orientation



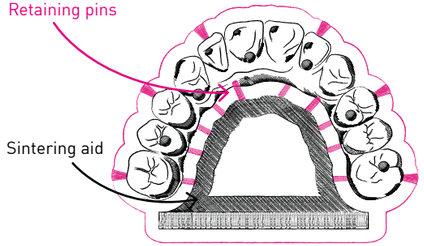


### (C) How big is the bridge?

#### From 4-unit-bridges and above

### C-1 Create a sintering aid

- Align the retaining pins in a straight line opposite each other
- Adjust the cross-section of the retaining pins to suit the load to be supportedn
- For sintering, place the restoration on the reverse side of the sintering body




#### If there are less than 4 units

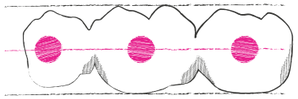
### C-2 Securing the disc

2 retaining pins per unit



Top view

Fit the retaining pins centrally at the equator height



Side view

**ATTENTION**

**The volume of the sintering aid should be between 90% and 100% of the object's volume.**

# Finishing – before and after sintering

Objective: No cracks or fractures in the restorations

**Note:** Please work without applying pressure.

The following is required before sintering:



Narrow rubber wheel



Small rose head burr



Rubber



Diamond burr

Make any adjustments, as many as possible, before sintering.



**PRITI® TIP**

**Improving efficiency:**

**1**

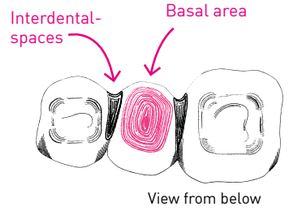
**We recommend processing as much as possible whilst it is still in the white stage.**

**2**

**All areas should be machined in such a way that, after sintering, they can be smoothed and polished using suitable tools.**



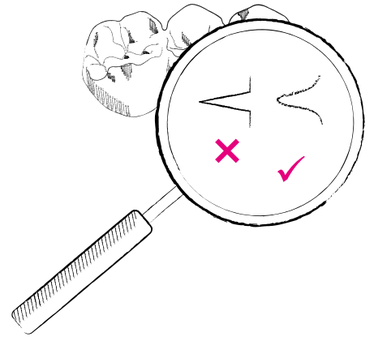
## (A) Interdental spaces and basal surfaces



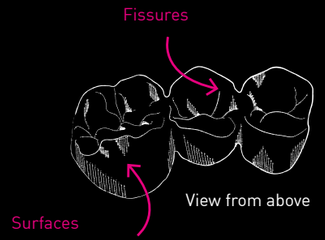

View from below

Ensure that the basal surfaces and interdental spaces are rounded off.

## (B) Do not include any sharp edges



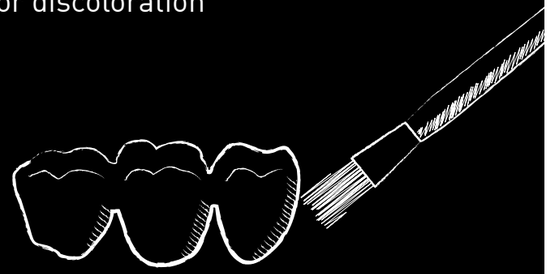
## **(C)** Fissures on surfaces




Smooth and round off the surfaces as much as possible. Where necessary, work in the desired surface texture more prominently.



## **(D)** Removing residue or discoloration



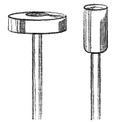
(e.g. remove marks or grinding residues with a brush or paintbrush)



## The following is required after sintering:



Rubber



Heatless stones



Water-jet-cooled grinder

## After sintering grind as little as possible!



### PRITI® TIP

**Please only use tools that are specifically recommended for zirconium dioxide!**

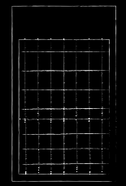
# Control of the effective sintering temperature using PTC rings type MTH

Objective: Optimal sintering results for translucency, color and strength

## You will need:



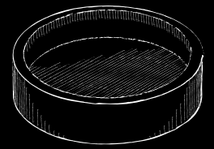
PTC ring



Reference temperature table (included with the rings)



Callipers



Sintering tray

## How it works:



The PTC rings indicate the amount of energy absorbed through their shrinkage during sintering.



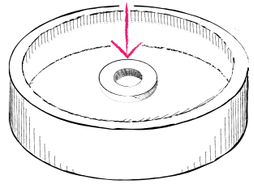
The PTC rings therefore respond to the energy output (temperature/time). The reference temperature table is supplied with the PTC rings. This specifies the energy output for a holding time of one hour.

## ...for our pritidenta sintering programmes, this means:

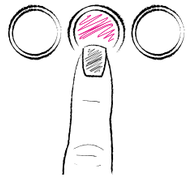
| priti® Sintering range | Furnace settings: Final temperature/ holding time | Target temperature for the shrinkage of the PTC ring in the reference temperature table |
|---|---|---|
| Fast sintering (4 h) | 1,500°C/30 min | 1,480–1,500°C |
| Standard sintering (7 h) | 1,450°C/120 min | 1,450–1,470°C |
| Final temperature (1 h) | 1,550°C/5 min | 1,460–1,476°C |



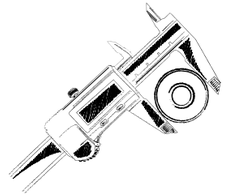
## (A) Place the PTC ring in the sintering tray



## (B) Select sintering programme and start



## (C) After sintering, measure the PTC ring using callipers

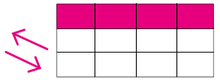


## (D) Compare tables

Look up the diameter of the ring in the enclosed reference temperature table and check whether the value falls within the temperature tolerance specified in the table above.



The batch number of the ring must match the batch number on the table.



## (E) Correct your entry

If the value deviates beyond the temperature tolerance, the programme must be adjusted upwards or downwards, depending on the extent of the deviation.

**FOR EXAMPLE**

Programmed final temperature: 1,450°C

Temperature measured using the PTC ring: 1,490°C

Final temperature correction: 1,420°C

## (F) Repeat the process

Check the furnace adjustment in the next sintering sequence using a PTC ring.



**PRITI® TIP**

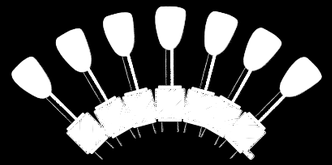
**Check the sintering temperature of the furnace every month**

# Choosing the right shade for zirconium dioxide

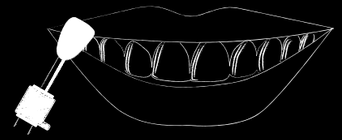
Objective: To get the shade right first time

## (A) Determining and selecting the correct shade for the patient

**1** Use the shade guide provided by the $ZrO_2$ manufacturer



**2** Compare the shade guide sample with the patient's tooth color



**3** Take photographs of selected samples together with the patient's tooth



**4** Preventing potential color variations



Taking a photo in daylight



Where possible, female patients should avoid wearing lipstick

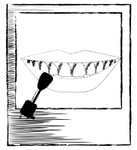


Has teeth whitening already been carried out?

Don't take the shade if the patient has just undergone a long treatment (dehydrated teeth).



## (B) Send data to the dental laboratory



→ Dental technician

## (C) Choosing the right disc

- ✓ Color
- ✓ Translucency
- ✓ Properties
- ✓ Flexural strength



## (D) Finishing



Match the finished restoration to the patient's natural tooth color. Once the shade matches, the restoration can be fitted.

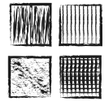
**DONE!**

### Important note !

This guide does not guarantee that the shade will be exactly right first time. The following factors may unfavorably distort the color perception:



Comparison of a thin shade guide sample with a large, bulky restoration



Various background colors (dark, light, patterned, etc.)



Surface treatment finishes (polished, glazed, etc.)



Restorations/color samples were photographed in the shade, against the light, or in direct sunlight

# The Perfect Fit

## Objective: Optimal fit of the pritidenta zirconia bridge

### (A) How it works



1. Check the sintering furnace monthly using PTC rings



2. Add sintering aid from 4 units upwards



3. Carry out standard priti® sintering

**1,450°C**
**7 hours**
**120 minutes Holding time**

### (B) Nesting

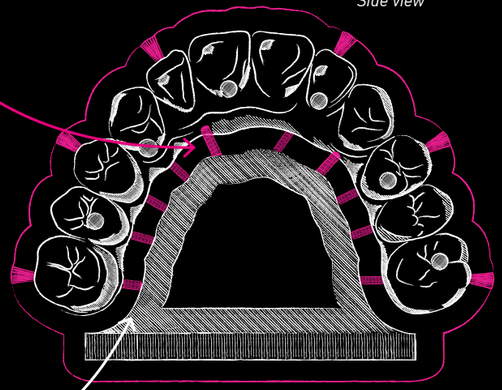
Fit the retaining pins centrally at equatorial height



*Side view*

Retaining pins in a line relative to one another

Adjust the cross-section of the retaining pins to the load to be supported



No sinter supports or sinter stops required!



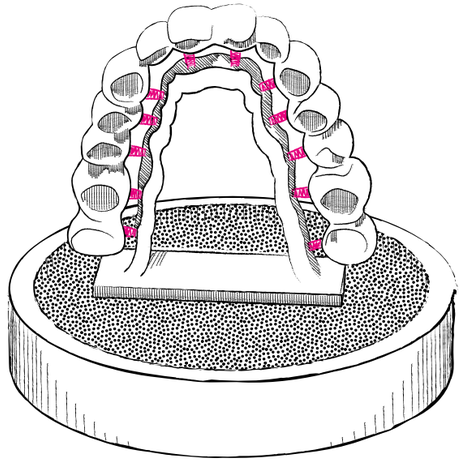
**PRITI® TIP**

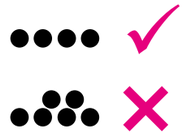
**The volume of the sintering aid should be between 90% and 100% of the object's volume.**



### (C) Preparing for sintering

- Place the bridge firmly on the flat surface
- The pearls/granules should be even



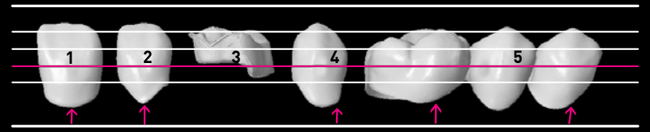


# Positioning aid for

## priti®multidisc $ZrO_2$ **Multi Translucent PLUS (MTP)**

Below, we would like to provide our recommendations for the positioning of dental restorations in our **Multi Translucent PLUS** zirconia disc. The specified restoration heights refer to the original dimensions, without applying the scaling factor.

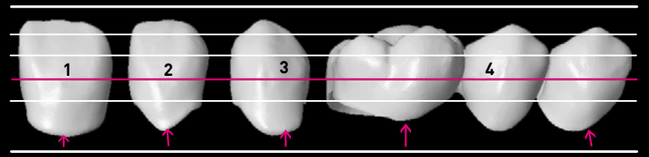
### 14 mm Disc




In principle, it is possible to position restorations differently from this recommendation where different proportions of the dentine and incisal portions are desired.

| | |
|---|---|
| Restoration height | < 9 mm |
| Anterior teeth | 1.5 mm from the top edge |
| Posterior teeth | 2 mm from the top edge |
| Recommended indications | Veneers, inlays, crowns and bridges with a maximum height of 11 mm ✓ |

### 16 mm Disc

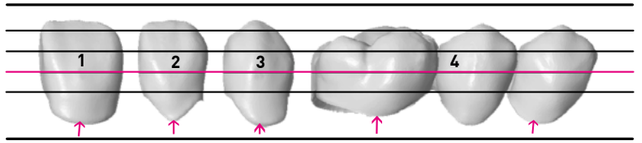



In principle, it is possible to position restorations differently from this recommendation where different proportions of the dentine and incisal portions are desired.

| | |
|---|---|
| Restoration height | 9–11 mm |
| Anterior teeth | 1.5 mm from the top edge |
| Posterior teeth | 2 mm from the top edge |
| Recommended indications | Veneers, crowns and bridges with a height of at least 9 mm and no more than 11 mm ✓ |



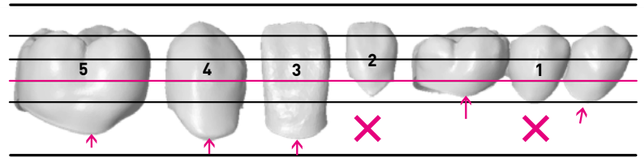
### 18 mm Disc




In principle, it is possible to position restorations differently from this recommendation where different proportions of the dentine and incisal portions are desired.

| | |
|---|---|
| Restoration height | 11–12.5 mm |
| Anterior teeth | 2 mm from the top edge |
| Posterior teeth | 2.5 mm from the top edge |
| Recommended indications | Veneers, crowns and bridges with a height of 11 mm and a maximum of 12.5 mm ✓ |

### 20 mm Disc

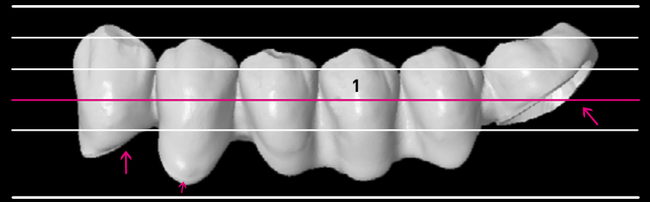



Example 1

In principle, it is possible to position restorations differently from this recommendation where different proportions of dentine and incisal areas are desired. In the case of crown No. 2 and bridge No. 1 (restoration height < 11 mm), it can be seen that the restoration heights are too low and do not display any cervical dentine color.

| | |
|---|---|
| Restoration height | 12.5–14 mm |
| Anterior teeth | 2 mm from the top edge |
| Posterior teeth | 2.5 mm from the top edge |
| Recommended indications | Veneers, crowns and bridges with a height of at least 12.5 mm and no more than 14 mm ✓ |

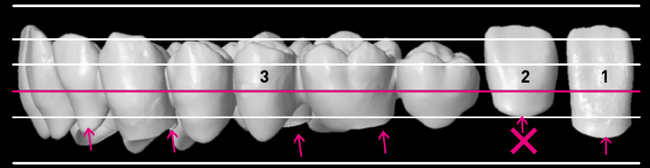
## 20 mm Disc




Example 2

This example shows a more pronounced Spee curve. To achieve a more or less uniform color distribution across the entire restoration, we recommend positioning the first and last teeth at approximately the same height from the upper edge. In this position, the color gradient of the bridge is more uniform. *If the teeth are too light or too dark, their color can be adjusted after sintering using stains, structure pastes or veneering materials.*

## 25 mm Disc



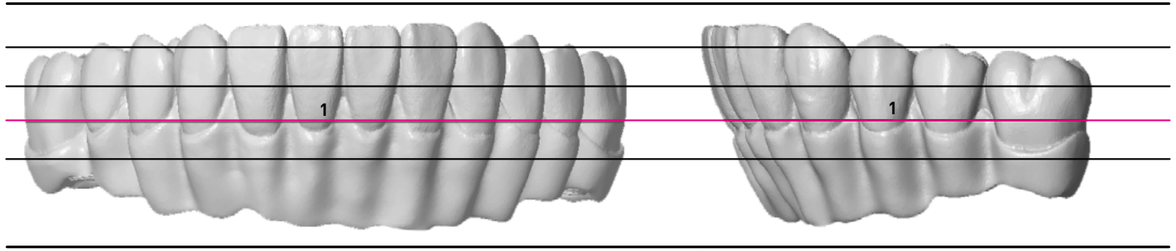

Example 1

| | |
|---|---|
| Restoration height | > 14 mm |
| Anterior teeth | 2.5 mm from the top edge |
| Posterior teeth | 3 mm from the top edge |
| Recommended indications | Veneers, crowns and bridges with a height of at least 14 mm ✓ |

In this case, we see a 14-unit bridge with a restoration height of 14 mm and crown no. 1 (16 mm) with our positioning recommendation and a beautiful color gradient across the entire surface. In the case of crown no. 2 (restoration height 11 mm), it can be seen that the crown is too small for the blank and does not include any cervical dentine color.

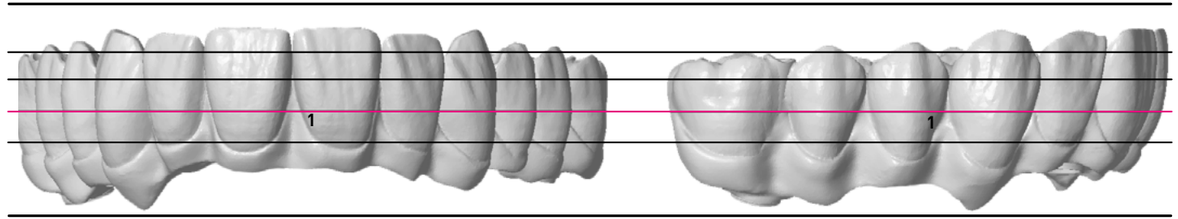


## 25 mm Disc




Example 2 Example 2

Given the direction of insertion and the substantial amount of gingiva, we recommend in this case (restoration height < 18 mm) that the anterior teeth be positioned optimally and the posterior teeth be lowered. After sintering, the anterior teeth will be slightly lighter in color than the posterior teeth. *This can be adjusted by applying stains, structure pastes or veneering materials.*



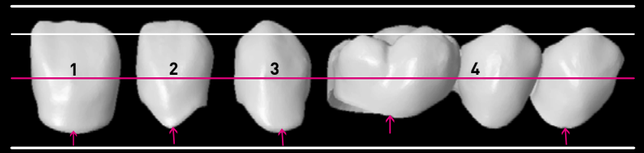

Example 3 Example 3

The images show an example of an 'all-on-6' restoration in the upper jaw (restoration height < 18 mm). Due to the direction of insertion, we recommend positioning the anterior teeth optimally and lowering the posterior teeth. After sintering, the anterior teeth will be slightly lighter in color than the posterior teeth. The user still has some leeway to position the restoration in order to achieve more enamel color or dentine color. *If the teeth are too light or too dark, their color can be adjusted after sintering using stains, texturing pastes or veneering materials.*

# Positioning aid for
## priti®multidisc $ZrO_2$ Multi Translucent **(MT)**

The following instructions are our recommendations for achieving the best final results in dental restorations when using **Multi Translucent zirconia** disc. The specified restoration heights refer to the original dimensions, without applying the scaling factor.

## 16 mm Disc

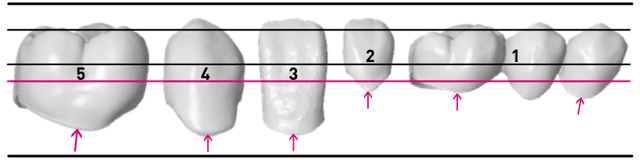



| | |
|---|---|
| Restoration height | < 11 mm |
| Anterior teeth | 1.5 mm from the top edge |
| Posterior teeth | 2 mm from the top edge |
| Recommended indications | Veneers, crowns and bridges with a maximum height of 11 mm ✓ |

In principle, it is possible to position restorations differently from this recommendation, where different proportions of the dentine and incisal portions are desired.



## 20 mm Disc




Example 1

| | |
|---|---|
| Restoration height | < 14 mm |
| Anterior teeth | 1.5 mm from the top edge |
| Posterior teeth | 2 mm from the top edge |
| Recommended indications | Veneers, crowns and bridges with a maximum height of 14 mm ✓ |

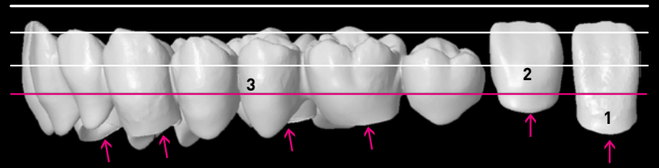
In principle, it is possible to position restorations differently from this recommendation where different proportions of dentine and incisal areas are desired.
Crown No. 2 and bridge No. 1 (restoration height < 11 mm) demonstrate that the restoration heights are too low, yet still reveal the cervical dentine color.




Example 2

This example shows a clearer Spee curve. To achieve a more even color distribution across the entire restoration, it is advisable to position the first and last teeth at roughly the same height from the upper edge. In this position, the color gradient of the bridge is more even. *If the teeth are too light or too dark, their color can be adjusted after sintering using stains, structure pastes or veneering materials.*

## 25 mm Disc



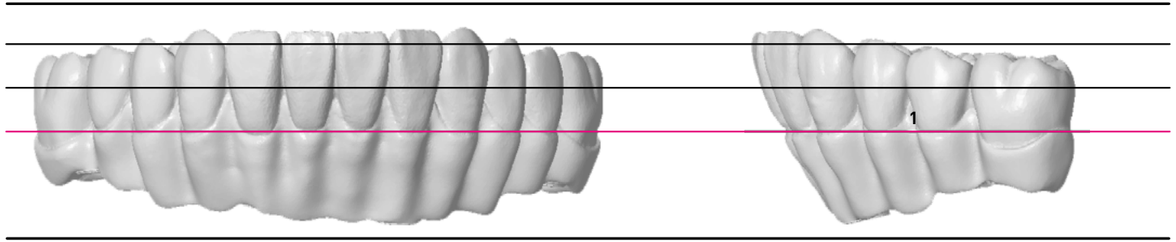

Example 1

In this case, we see a 14-unit bridge with a restoration height of 14 mm and Crown No. 1 (16 mm), positioned according to our recommended positioning guidelines, showing a beautiful shade gradient across the entire surface. Crown No. 2 (restoration height: 11 mm) demonstrates that the crown is too small and therefore only exhibits the same cervical dentin shade throughout.

| | |
|---|---|
| Restoration height | < 19 mm |
| Anterior teeth | 1.5 mm from the top edge |
| Posterior teeth | 2 mm from the top edge |
| Recommended indications | Veneers, crowns and bridges with a maximum height of 19 mm ✓ |

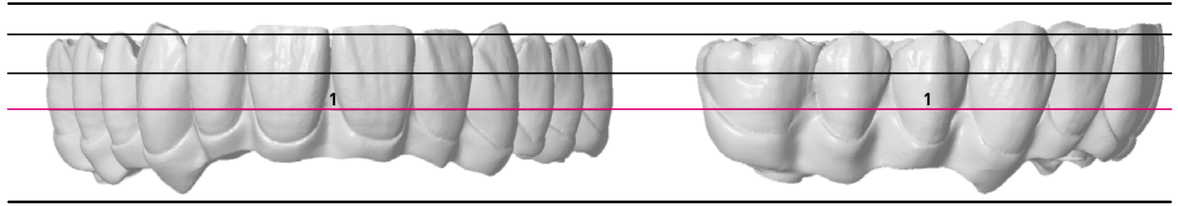


## 25 mm Disc




Example 2

Given the direction of insertion and the thick gingiva, we recommend, in this case, optimising the positioning of the anterior teeth and reducing the height of the posterior teeth (restoration height < 18 mm). After sintering, the anterior teeth will be slightly lighter in color than the posterior teeth. *This can be color-matched by applying stains, structure pastes or veneering materials.*




Example 3

The images show an example of an 'all-on-6' restoration in the upper jaw (restoration height < 19 mm). Given the direction of the abutments, it is advisable to position the anterior teeth optimally and to lower the posterior teeth. After sintering, the anterior teeth are slightly lighter in color than the posterior teeth. There is still some leeway for the user to position the restoration in order to achieve more enamel color or dentine color. *If the teeth are too light or too dark, their color can be adjusted after sintering using stains, structure pastes or veneering materials.*

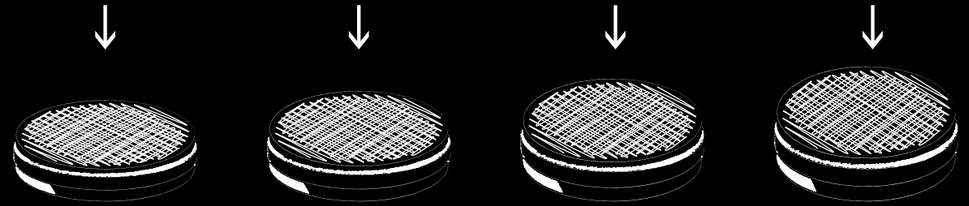
# Disc selection and positioning aid for

priti®multidisc $ZrO_2$ Extra Translucent Multilayer compact **(ET ML)**
priti®multidisc $ZrO_2$ High Translucent Multilayer compact **(HT ML)**

## **(A)** Selecting the height

What is the construction height of the restoration?

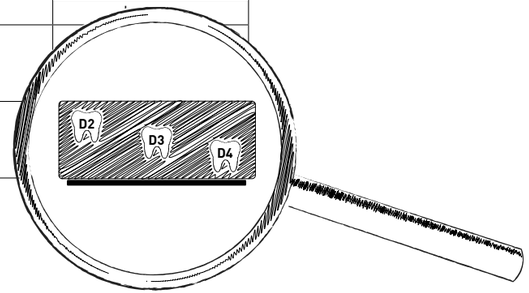
| **Restoration height:** | 6–9 mm | 9–12 mm | 12–14 mm | 14–18 mm |
|---|---|---|---|---|
| **Disc height:** | 14 mm | 18 mm | 20 mm | 25 mm |





## **(B)** The correct color assignment

| **Desired result:** | **Available colours:** | **Correct positioning:** |
|---|---|---|
| *VITA classical®* | *pritidenta® colour* | *in the disc* |
| A1 | A 1-3 | top |
| A2 | | middle |
| A3 | | bottom |
| A3 | A 3-4 | top |
| A3.5 | | middle |
| A4 | | bottom |
| B1 | B 1-2 | top |
| | | middle |
| B2 | | bottom |
| B3 | B 3-4 | top |
| | | middle |
| B4 | | bottom |
| C1 | C 1-2 | top |
| | | middle |
| C2 | | |
| C3 | C 3-4 | |
| | | |
| C4 | | |
| D2 | D 2-4 | |
| D3 | | |
| D4 | | |



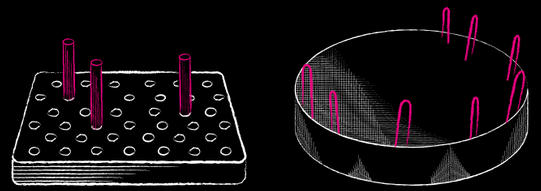
# Firing of large restorations made from priti®multidisc $ZrO_2$

Objective: Proper heating and cooling of monolithic $ZrO_2$ restorations in the ceramic furnace to prevent thermal stress.

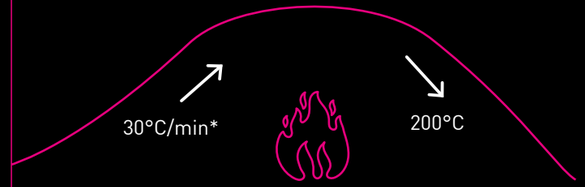
**Challenge:**
$ZrO_2$ has low thermal conductivity and therefore heats up very slowly



## (A) Use metal-free firing supports and pins

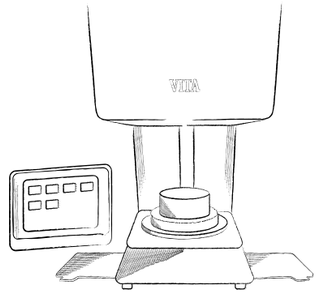


## (B) Long-term cooling required (For all firing sequences)

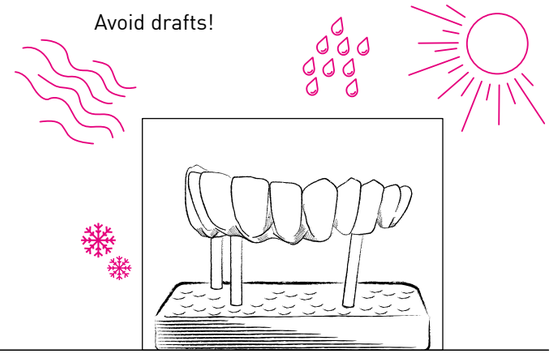



*30–35°C/min
depending on the size of the restoration

## (C) Do not open the furnace until it has reached 200–300°C

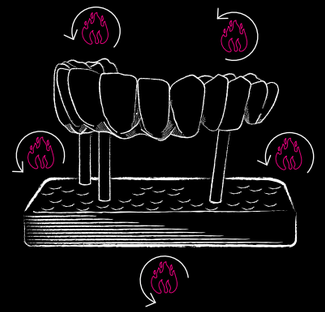


## (D) Leave to cool evenly



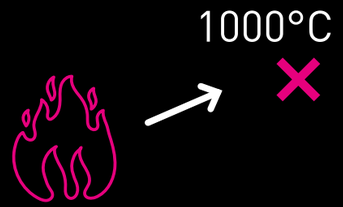
## (E) Carry out a maximum of 4–5 firings

Do not fire more often than necessary



## (F) Avoid regeneration firings to prevent thermal stress

Regeneration firings only for pure 3Y zirconia and with prolonged cooling




## PRITI® TIP

**Prerequisites for the successful finishing of solid $ZrO_2$ restorations:**

- **Do not use cutting discs either before or after sintering.**
- **After sintering, grind as little as possible and apply minimal pressure to prevent localised overheating.**
- **If the gloss of the glaze and/or the applied mixtures is insufficient, the holding time should be extended rather than increasing the final temperature.**



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