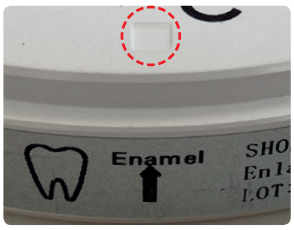
SHOFU Disk ZR Lucent Supra Advanced Product Information

1. Preferably store the disk in its holder

Advantages: In this way, the disk is stored in the right position, and the holder prevents zirconia pieces from breaking off.

2. Checking the mark on the disk

After removing the disk, the mark on its top (small square indentation) helps you to find the right position in the holder again. Mark the position on the holder with a pen before removing the disk.



3. Converting the enlargement/shrinkage factor into %:

Every disk is different. This is why disks are labelled with their specific enlargement/shrinkage factors, which need to be observed.

On our zirconia disks, for example, a factor of 1.231 is indicated.

This means you should select an **oversizing** value of 23.10 % in your CAD software.

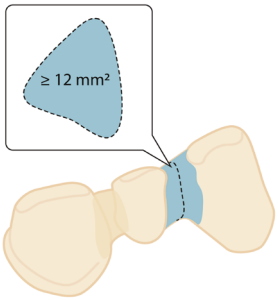
1.231 x 100 = 123.10 (+ 23.10 %)

If you need the **shrinkage** value in %, e.g. when using Zirkonzahn machines, calculate as follows:

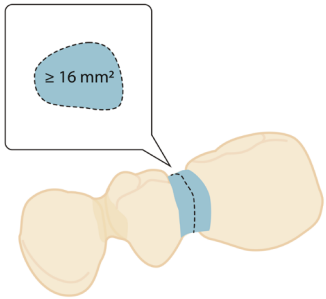
100 : 1.231 = 81.23 (- 18.77 %)

4. Connectors

Anterior bridge 12 mm²

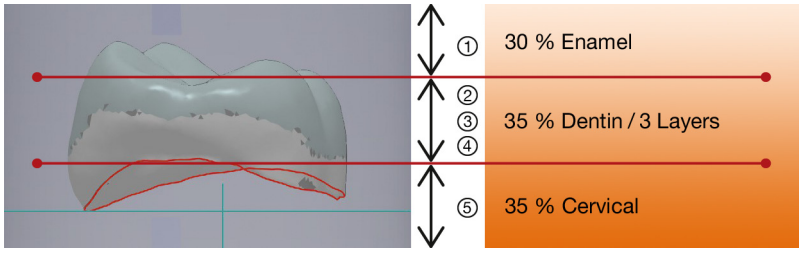


Posterior bridge 16 mm²



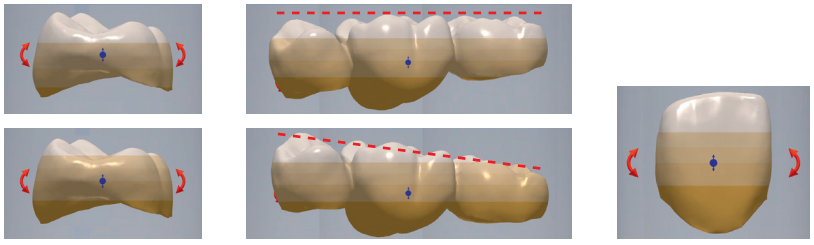
5. Nesting the restoration

To optimally benefit from the gradation of the disk, position the restoration as centrally as possible.



By shifting your planned restoration along the vertical axis (z-axis) to the cervical aspect, you can increase its chroma; by shifting it to the incisal aspect, you can make it lighter in value and more translucent.

Tilting the horizontal axis will lead to a disharmonious shade gradient.



Z-axis position | Tilted position | Central position

6. Milling

When processing the disk in your CNC milling machine, select the parameters for multilayer zirconia. These settings are a little gentler on the disk than the monolayer milling parameters.

ZR Lucent und ZR Lucent Supra require dry milling. We strongly recommend not using any coolants during the milling process, because this could change the shade and/or reduce the translucency of the material.

Besides, the disk should not be handled with wet hands.

7. Removing the restoration

It has proved useful to separate the milled restoration from the disk with a thin carbide bur or a fissure bur, avoiding vibrations as far as possible. Then remove excess material by smoothing the surface with a silicone polisher (CeraMaster).

8. Colouring zirconia

Generally, colouring liquids are applied to white zirconia before sintering. When using multilayer zirconia, however, this technique does not make much sense, since the colours are opaque and targeted colouring cannot be achieved. The colour will not be visible until the material is sintered.

Disadvantages:

Infiltration colours used to be acidic and opaque. Today's HT Liquids are less acidic and more translucent. Besides, these liquids contain iron nitrates and other metal-based hydrates.

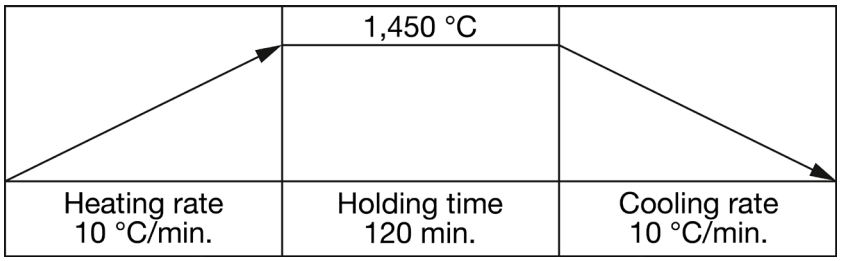
In any case, infiltration will reduce the strength values of zirconia after sintering!

9. Sintering

Sinter the restoration in a special high-temperature sintering furnace. The firing schedule is as follows:

Heat up from room temperature to 1,450 °C at a rate of 10 °C/min, hold temperature for 2 hours, cool down to room temperature at a rate of 10 °C/min.

Depending on the furnace used, cooling down may take place naturally, without a special firing schedule, from approx. 600 °C.



Any increase or decrease in the heating rate per minute will influence the translucency and may negatively affect the physical properties of your zirconia.

Optional "high-speed sintering" is not possible!

10. Adjustments after sintering

Any necessary adjustments to the shape of the densely sintered zirconia restoration should only be made with suitable diamond abrasives, e.g. Dura-Green Dia, without local overheating or excessive pressure, to avoid any damage to the material.

Never use milling tools, as these will damage the restoration surface!

11. CTE

SHOFU Disk ZR Lucent	(25-500 °C): 10.2 x $10^{-6}K^{-1}$
SHOFU Disk ZR Lucent Supra	(25-500 °C): 10.5 x $10^{-6}K^{-1}$

12. Veneering

Restorations with a reduced contour can be veneered with Vintage ZR or Vintage LD translucent, enamel and effect shades. Veneering with dentin or cervical shades is not needed, since these shades are created by the multilayer zirconia.

When designing the restoration, reduce the contour by approx. 0.5-1.0 mm.

Prepare the surface to be veneered by sandblasting with 50 µm Al_2O_3 at a pressure of approx. 1-2 bar and a distance of approx. 10 mm from the blast nozzle. Then clean the surface with a steam cleaner.

For proper adhesion of the subsequent layers, connector firing with a translucent layer, approx. 20 °C above the standard firing temperature, is recommended.

13. Cementing ZR Lucent and ZR Lucent Supra restorations

Prior to placing the restoration on the tooth, sandblast the internal surfaces of the restoration with 50 µm Al_2O_3 at a pressure of approx. 1-2 bar and a distance of approx. 10 mm from the blast nozzle.

Then clean the surfaces with alcohol!

Preferably use adhesive resin cements, e.g. ResiCem, and suitable primers, e.g. SHOFU Universal Primer, to place the restoration.