

### SINTERING FURNACES

Built for the future

### Zirkonzahn

# ON FIRE FOR THE FUTURE!

*Fire is a force of nature with practically infinite energy. It is fascinating and yet dangerous.* 

The evolution of mankind would never have happened without the energy of fire. Fire has always been and remains the symbol for heat, energy and passion. Only people driven by an inner flame can conceive innovation and create works of art.

A person who is being consumed by this inner fire will never be satisfied with the status quo but wants to be ready for whatever the future may bring, even before it happens – they are always one step ahead, on fire for the future.

People bursting with enthusiasm are capable of convincing others, laying the basis for their success. Light your fire!

quirico Stere Thing they



### SINTERING FURNACES FOR ALL LABORATORY NEEDS

The Zirkonzahn sintering furnace product range with its various models offers the right furnace for every laboratory: thanks to their high operating comfort, their intuitive user-friendliness, their in-house developed electronics and the energy-saving Zirkonofen Turbo and Zirkonofen 600/V4, the Zirkonhzahn sintering furnaces are ideally tailored to meet individual utilisation requirements. All furnaces are optimally integrated in Zirkonzahn's workflow, cover a wide range of indications and thus fulfil the various laboratory and customer requirements in the best possible way. For precise and accurate sintering results that truly make a difference!





# SINTERING PROCESSES



\*Our sintering furnaces are perfectly matched to Zirkonzahn's zirconia materials, but upon request it is also possible to sinter zirconia from other manufacturers with our furnaces. With the Turbo and 600/V4 sintering furnaces, the user has the option of creating individual sintering programs and adapting them to the zirconia materials of other manufacturers.

# SINTERING SPEEDS

Sintering speeds that can be selected using the different sintering furnaces: The specified duration of the respective sintering program includes heating, holding and cooling phases. Taking the respective sintering parameters into account, homogeneous sintering results are achieved with all programs.

| Hours<br>0 1 2 3 4 5 6 7 8 9 10 11 12 | Zirkonofen 600/V4 | Zirkonofen 700 | Zirkonofen 700<br>Ultra-Vakuum | Zirkonofen Turbo | Sinterofen 300S |
|---------------------------------------|-------------------|----------------|--------------------------------|------------------|-----------------|
| SLOW                                  | $\checkmark$      | $\checkmark$   | $\checkmark$                   | $\checkmark$     |                 |
| STANDARD                              | $\checkmark$      | $\checkmark$   | $\checkmark$                   | $\checkmark$     |                 |
| SPEED                                 |                   | $\checkmark$   |                                |                  |                 |
| SPEED                                 | $\checkmark$      |                |                                | $\checkmark$     |                 |
| ULTRA-<br>SPEED                       |                   |                |                                | $\checkmark$     |                 |
| METAL SINTERING                       |                   |                |                                |                  |                 |

Slow program: suitable for heavy structures (over 5 g per unit)\*

Standard program: suitable for medium-heavy structures (3-5 g per unit)\*

Speed program: suitable for light structures (2-3 g per unit)\*

Ultraspeed program: suitable for super light structures (below 2 g per unit)\*

Metal Sintering program: suitable for all kind of Sinternit restorations.

\*All indications are recommendations without guarantee.

## Zirkon zahn

| 0          |  |  | =EN 600             |   |
|------------|--|--|---------------------|---|
| V4 600/V2  | 2 MoSi <sub>2</sub> high-performance<br>elements | e heating $\  \  \  \  \  \  \  \  \  \  \  \  \ $ | e 5 preset programs | Individual sintering programs<br>on request |
| 700 600/V4 | <b>60</b> Space for up to 60 zirconi elements    | a Compact stainless steel casing                   |                     |   |
| 700 U-V    |  |  |                     |   |
| TURBO      |  | 3  | 3                   |   |
| 3005       |  |  |                     |   |
| 6          |  |  |                     |   |



# ZIRKONOFEN 600/V2

Sintering furnace for sintering up to 60 zirconia elements in a compact stainless steel casing. Equipped with 2 MoSi<sub>2</sub> high-performance heating elements and the possibility to set up individual sintering programs upon request.

### **TECHNICAL DATA**

| Size (W x H x D)              | 29 x 61 x 43 cm   |
|-------------------------------|---|
| Weight                        | 47 kg   |
| Electrical power              | 1250 W  |
| Mains voltage                 | 100–130 V ~ / 50–60 Hz<br>210–240 V ~ / 50–60 Hz  |
| Sintering chamber capacity    | 0.6 l   |
| Sintering chamber (W x H x D) | 6 x 10 x 10 cm  |
| Max. temperature              | 1700 °C   |
| Vacuum                        | No  |
| Capacity                      | up to 60 zirconia elements (with sintering tray) or<br>up to 2 circular bridges (with ceramic protection cover M) |
|                               |   |





**REMOTE MONITORING VIA SMARTPHONE APP** 

*The new Zirkonzahn.App permits to monitor the furnace remotely. This makes all necessary information quickly and easily accessible.* 





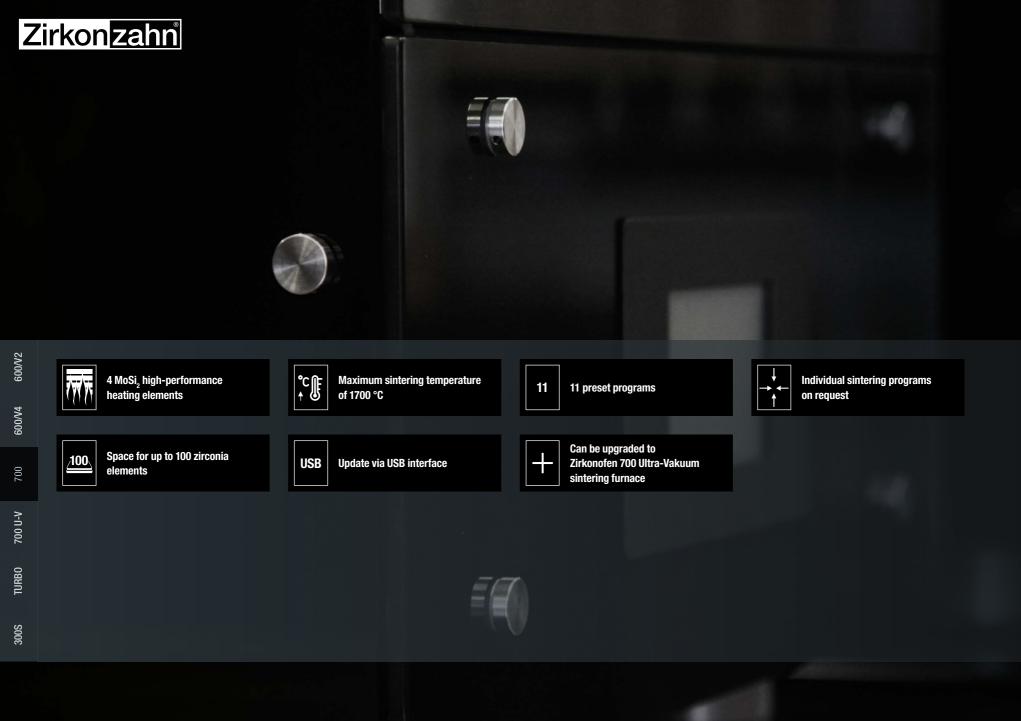
# **ZIRKONOFEN 600/V4**

Equipped with a sintering chamber that offers space for up to 60 zirconia elements and 2  $MoSi_2$  high-performance heating elements, the Zirkonofen 600/V4 sintering furnace achieves heating rates of up to 60 °C/min and has an automated door that accelerates the cooling process. In this way, thin zirconia elements can be sintered in less than 3 hours and with a power consumption of less than 1.5 kWh.

### **TECHNICAL DATA**

| 39 x 69 x 49 cm                                     |
|---|
| 75 kg   |
| 1500 W  |
| 110-240 V ~ / 50-60 Hz                              |
| 0.6 l   |
| 6 x 10 x 10 cm                                      |
| 1700 °C   |
| No  |
| up to 60 zirconia elements<br>(with sintering tray) |
|   |







### **ZIRKONOFEN 700**

Sintering furnace for sintering up to 100 zirconia elements in a compact stainless steel casing. Equipped with 4 MoSi<sub>2</sub> high-performance heating elements, a 4.3" colour touchscreen and the possibility to set up individual sintering programs via the USB interface.

### **TECHNICAL DATA**

| Size (W x H x D)              | 49 x 70 x 55 cm   |
|-------------------------------|---|
| Weight                        | 117 kg  |
| Electrical power              | 2300 W  |
| Mains voltage                 | 100–130 V ~ / 50–60 Hz<br>210–240 V ~ / 50–60 Hz  |
| Sintering chamber capacity    | 0.8 l   |
| Sintering chamber (W x H x D) | 8 x 10 x 10 cm  |
| Max. temperature              | 1700 °C   |
| Vacuum                        | No  |
| Capacity                      | up to 100 zirconia elements (with sintering tray) or<br>up to 3 circular bridges (with ceramic plate and<br>ceramic protection cover M) |



300S

### Zirkonzahn

#### NOTE:

In order to sinter Zirkonzahn's Sinternit, the Zirkonofen 700 Ultra-Vakuum must be upgraded with the Sinter Metal Furnace Adapter.







Space for up to 100 zirconia /100 elements



TURBO

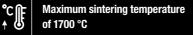
300S

700

Can be upgraded for sintering Sinternit with special adapter

4 MoSi, high-performance

heating elements



Update via USB interface

USB

15 preset programs 15

12



Individual sintering programs on request



Sintering without shielding gas; no residual oxides



Sintering under high vacuum



# **ZIRKONOFEN 700 ULTRA-VAKUUM**

### FOR SINTERING ZICONIA AND SINTERNIT IN THE SAME DEVICE

Sintering of up to 100 zirconia elements or up to 25 Sinternit elements under vacuum and without shielding gas. Equipped with 4 MoSi, high-performance heating elements, a 4.3" colour touchscreen and the possibility to set up individual sintering programs via the USB interface.

| ECHNICAL DATA                 |  |  |
|-------------------------------|--|--|
| Size (W x H x D)              | 49 x 70 x 55 cm  |  |
| Veight                        | 117 kg   |  |
| lectrical power               | 2300 W   |  |
| Nains voltage                 | 100–130 V ~ / 50–60 Hz<br>210–240 V ~ / 50–60 Hz   |  |
| intering chamber capacity     | 0.8  | AND THE OWNER OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER OWNE |
| Sintering chamber (W x H x D) | 8 x 10 x 10 cm   |  |
| lax. temperature              | 1700 °C  |  |
| /acuum                        | Yes  |  |
| Capacity                      | up to 100 zirconia elements (with sintering tray),<br>up to 25 Sinternit elements or up to 3 circular bridges<br>(with ceramic plate and ceramic protection cover L) |  |



### T.





Sinternit bar – unsintered





600/V4

700

700 U-V

TURBO

# **KIT SINTER METAL FURNACE ADAPTER**

### FOR SINTERING SINTERNIT WITH THE ZIRKONOFEN 700 ULTRA-VAKUUM

- Upgrade of the Zirkonofen 700 Ultra-Vakuum with the Sinter Metal Furnace Adapter Kit for sintering Sinternit
- Particularly economical, as no additional sintering furnace needs to be purchased for sintering Sinternit
- Sintering of Sinternit without shielding gas and without residual oxides
- Ready for application in a few single steps
- Sintering of up to 25 Sinternit elements in one process

#### FOR SINTERING SINTERNIT



600/V2

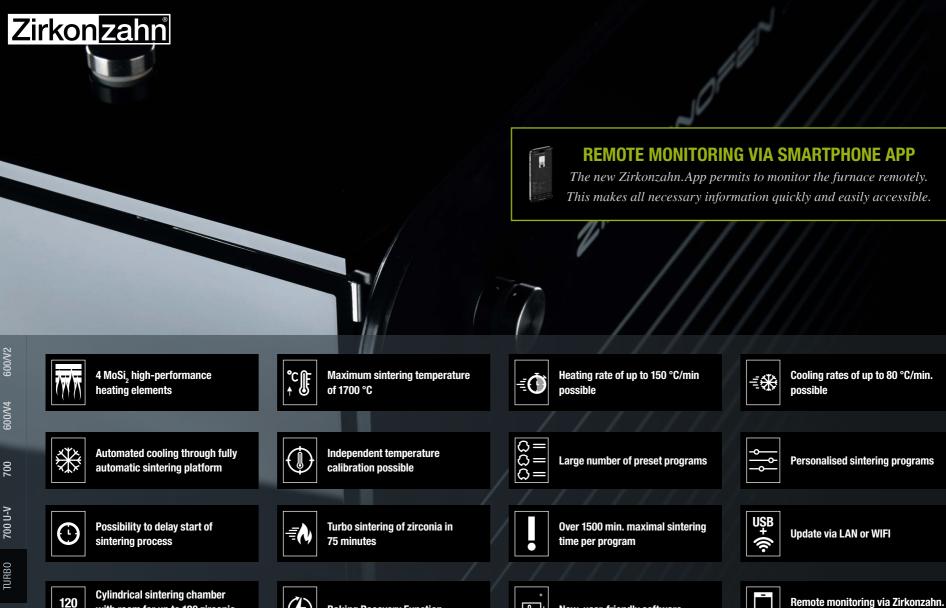
600/V4

700

700 U-V

TURBO

300S



ዀႵ

New, user-friendly software

Арр

**Baking Recovery Function** 

with room for up to 120 zirconia

elements



# **ZIRKONOFEN TURBO**

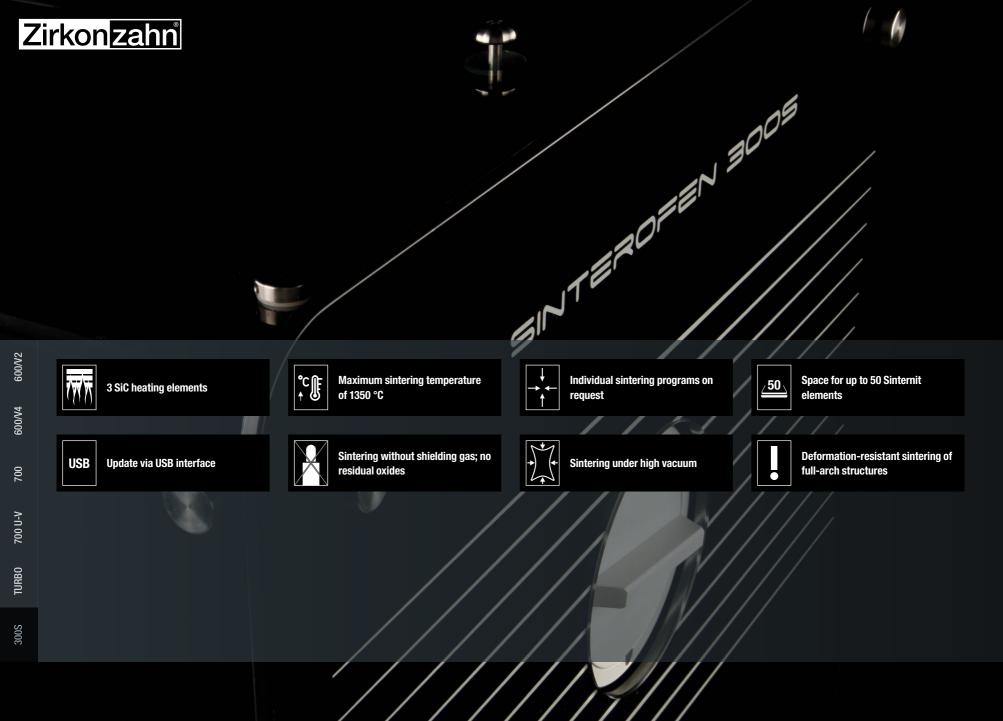
The Zirkonofen Turbo sintering furnace with optimised electronics and a newly developed software combines efficiency with flexibility. The furnace features a large sintering chamber, which offers space for up to 120 zirconia elements, as well as the ability to sinter zirconia in under 75 minutes. A large number of preset programs and the option of creating individual sintering programs via the software directly on the display make the furnace particularly user-friendly and intuitive to operate.

### **TECHNICAL DATA**

| Size (W x H x D)           | 39 x 69 x 49 cm   |
|----------------------------|---|
| Weight                     | 65 kg   |
| Electrical power           | 3000 W  |
| Mains voltage              | $200 - 240 \text{ V} \sim \pm 10 \% / 50 - 60 \text{ Hz}$   |
| Sintering chamber capacity | 0.9 l   |
| Sintering chamber          | Ø 10.5 cm x 10.5 cm   |
| Max. temperature           | 1700 °C   |
| Vacuum                     | No  |
| Capacity                   | up to 120 zirconia elements (with sintering tray) or<br>up to 3 circular bridges (with ceramic plate) |
|                            |   |



300S





# **SINTEROFEN 300S**

Sintering furnace for sintering up to 50 Sinternit elements under vacuum and without shielding gas, optionally in a resistant metal sheet casing or in a modern, high-quality full glazing. Stress-free sintering of single crowns up to circular bridges made of Sinternit. Equipped with 3 SiC heating elements, a 4.3" colour touchscreen and the possibility to set up individual sintering programs via the USB interface.

### FOR SINTERING SINTERNIT

| TECH | NI | C.A | DΔ | ТΔ |
|------|----|-----|----|----|
|      |    |     |    |    |

| Size (W x H x D)           | 47 x 56 x 71 cm   |
|----------------------------|---|
| Weight                     | 81 kg   |
| Electrical power           | 2600 W  |
| Mains voltage              | 100 – 130 V 50 – 60 Hz<br>210 – 240 V 50 – 60 Hz          |
| Sintering chamber capacity | 0.7 l   |
| Size Sinter Tube           | Ø 7.5 cm x 15 cm  |
| Max. temperature           | up to 1350 °C   |
| Vacuum                     | Yes   |
| Capacity                   | up to 50 Sinternit elements, 2 circular bridges or 6 bars |
|                            |   |



# **INTELLIGENT SOFTWARE & ZIRKONZAHN.APP**

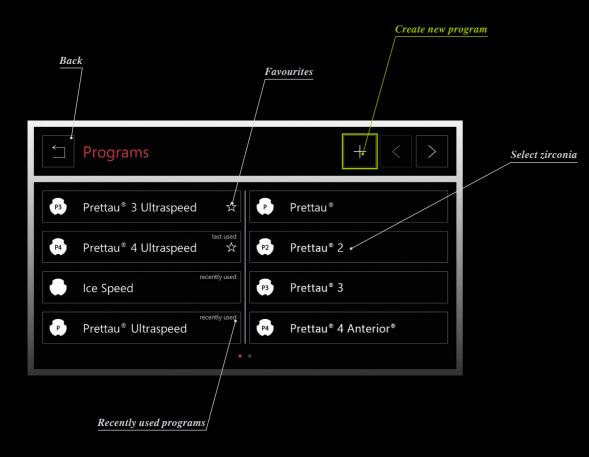
The Zirkonofen Turbo and the Zirkonofen 600/V4 sintering furnaces are equipped with a 7" touch display, which enables intuitive operation of the device. The different sintering programs can be selected and started directly on the display. Furthermore, it is possible to create individual programs, to add new functions and to modify settings. In order to always work with the latest functions and sinter programs available, the user can download updates independently and install them in the furnace via a stable Internet connection. Based on the user behaviour, the software recognises the most frequently used programs and saves them as favourites. This means they can be accessed more quickly during the next sintering process.



### **ZIRKONZAHN.APP**

With the Zirkonzahn. App, which is available for users of the Zirkonofen Turbo and Zirkonofen 600/V4 sintering furnaces, the furnace can be monitored remotely and the sintering progress can be checked directly on the mobile phone.

### SOFTWARE



| Custom program  |  |
|---|--|
| Heating Holding Cooling   |  |
| T Heating   |  |
| Start Temperature: 20 °C 1600   Target Temperature (°C): 1600 °C 7 8 9   Heating Rate: 10 °C/min 4 5 6   Heating Time: 158 min 1 2 3   0 ← ✓  |  |
| └ Custom program < > ✓  |  |
| Action   Settings     1   Heating   Time: 1h 19 min - Rate: 20:00 °C/min - Temp: 16:00 °C   Image: Image |  |
| Heating Holding Cooling   |  |
| S Programs + < >  |  |



# ACCESSORIES



*Sintering Tray Sinternit (Sintering Powder Supreme) (ZBAC3901) Tray for the sintering of Sinternit structures with up to 5 elements in the Zirkonofen 700 Ultra-Vakuum; total capacity: up to 25 elements.* 

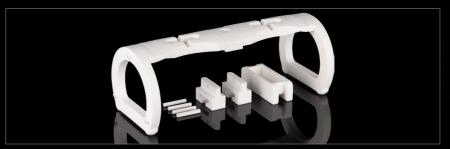


Sintering Tray Sinternit XL 300S (Sintering Powder Supreme) (ZBAC3911) Tray for the sintering of smaller Sinternit structures (up to 5 elements) in the Sinterofen 300S sintering furnace; total capacity: up to 50 elements.



#### Sintering Holder (ZBAC2188)

Suspension device for the sintering of larger Sinternit structures (at least 6 elements) fixed with the Bar Carrier and the Bar Carrier XL in the Zirkonofen 700 Ultra-Vakuum.



Sintering Holder XL 300S (ZBAC2189) Suspension device for the sintering of larger Sinternit structures (at least 6 elements) fixed with the Bar Carrier and the Bar Carrier XL in the Sinterofen 300S.

MORE INFORMATION





Sintering Platform XL (ZBAC3871) For an easy equipment of the Sintering Holder XL 300S and the well arranged storage of the accessories.



**Bar Carrier (ZBAC3801)** Fixing device for one bar in the Sintering Holder and Sintering Holder XL 300S.



*Insert Tray Supreme (ZBAC3821)* Can be filled with Sintering Powder Supreme and placed in the Sintering Holder/Sintering Holder XL 300S for sintering without residual oxides.



Sintering Powder Supreme (ZBAC3831) Sintering powder for sintering Sinternit without residual oxides.



**Bar Carrier XL (ZBAC3811)** Fixing device for up to 3 bars in the Sintering Holder and Sintering Holder XL 300S.



Insert Tray Supreme Extended (ZBAC3841) For equipping the Sintering Holder XL 300S with smaller Sinternit structures and for filling it with Sintering Powder Supreme for sintering without residual oxides; small and full-arch structures can be sintered in one sintering process.



# ACCESSORIES



*Sintering tray for Zirkonofen 600, 600/V2, 600/V3, 600/V4 (ZBAA3201)* 

The trays are designed in such a way that the heat can circulate optimally during sintering. Up to 3 sintering trays can be placed in the furnace.



Fine-grain sintering granules (ZBAA3251) Sintering powder for sintering zirconia structures with sintering trays. Size: 0.4 mm – 1.0 mm



Firing support for Zirkonofen 600, 600/V2, 600/V3, 600/V4 (ZBAA4591) For sintering zirconia materials. Size: 95 x 60 x 14 mm



*Sintering tray for Zirkonofen 700, 600/V2, 600/V3, 600/V4 (ZBAA3211)* 

The trays are designed in such a way that the heat can circulate optimally during sintering. Up to 3 sintering trays can be placed in the furnace.



**Coarse-grain sintering granules (ZBAA3261)** Sintering powder for sintering zirconia structures with sintering trays. Size: 0.3 mm – 2.0 mm



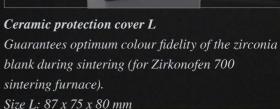
*Firing support 700 (ZBAA4491) For sintering zirconia materials in the Zirkonofen 700 sintering furnace. Size: 97 x 78 x 15 mm* 

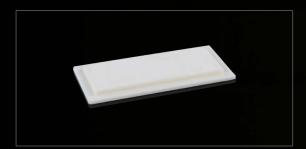


Ceramic protection cover S (ZBAA4631) Guarantees optimum colour fidelity of the zirconia blank during sintering (for Zirkonofen 600, 700 and Keramikofen 1500). Size S: 85 x 40 x 80 mm



Ceramic protection cover M (ZBAA4621) For optimal colour fidelity of the zirconia structures during sintering (for Zirkonofen 700 and Keramikofen 1500). Size M: 87 x 55 x 80 mm





Ceramic plate S with step (ZBAA9421) Sintering support to avoid contact stains on the framework (matching for ceramic protection cover S). Size S: 85 x 40 mm



Ceramic plate M with step (ZBAA9411) Sintering support to avoid contact stains on the framework (matching for ceramic protection cover M). Size M: 87 x 55 mm



Ceramic plate L with step (ZBAA9431) Sintering support to avoid contact stains on the framework (matching for ceramic protection cover L). Size L: 87 x 75 mm



# ACCESSORIES



*Ceramic plate Zirkonofen Turbo (ZBAA9441) Sintering support to avoid contact stains on the framework. It can contain* 

max. 3 full-arch bridges. Not to be used with the Ultraspeed program.

Ceramic protection cover Zirkonofen Turbo (ZBAA4671) For optimal colour fidelity of the zirconia structures during sintering. The curved shape serves for optimal heat distribution inside the protection cover. Not to be used with the Ultraspeed program.



#### Sintering Tray Speed for Zirkonofen Turbo (ZBAA3221)

The sintering trays are designed in such a way that the heat can circulate optimally during sintering. Up to 3 sintering trays can be placed in the sintering furnace. In this way up to 120 zirconia elements can be sintered in one sintering process.



**Temperature calibration ring for Zirkonofen Turbo, 600/V4 (ZBAC9081)** Content: 10 rings for temperature calibration of the Zirkonofen Turbo and the Zirkonofen 600/V4 sintering furnaces. A micrometer screw (or similar) to measure the ring diameter is required.



#### Tweezers for Zirkonofen Turbo (ZBAC9082)

Stainless steel tweezers for removing the sintering tray from the sintering chamber (included).

# ASSEMBLING THE ACCESSORIES IN THE SINTERING CHAMBER

For perfect sintering results and optimum usability, we recommend the following assembling of the sintering accessories in the sintering chamber of the Zirkonofen 600/V2, 600/V3, 600/V4 and 700 and 700 Ultra-Vakuum sintering furnaces.

#### With ceramic protection cover:

The firing support serves as a base for the ceramic plate to prevent it from sticking to the bottom of the sintering chamber. The ceramic plate is then placed on the firing support.

The zirconia structures that are to be sintered are positioned on the ceramic plate. In the case of bridges with a sintering stabiliser, these are placed upright on the ceramic plate. To prevent discolouration at the contact points, the structures must not touch each other.

The ceramic protection cover prevents discolouration or contamination of the structures underneath.

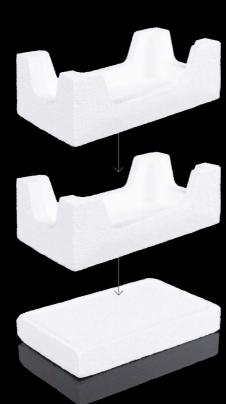




With sintering tray:

The firing support is used for easy positioning of the sintering trays in the sintering chamber.

Up to two stacked sintering trays can then be placed on the firing support. To avoid pressure marks on the zirconia elements during sintering, the elements must be placed on the sintering tray well apart from each other. For a deformation-free framework, the base of the sintering tray should be covered with sintering powder.





### Zirkonzahn

# FAQ

#### IS IT POSSIBLE TO SAVE INDIVIDUAL SINTERING PROGRAMS?

Each sintering furnace is equipped with a certain number of pre-installed sintering programs (see table on p. 5).

Individual sintering programs can also be created and saved on the furnace upon request. With the Zirkonofen Turbo and the Zirkonogen 600/V4 sintering furnaces, the user has the option of creating individual sintering programs in the software directly on the display in addition to the existing programs.

#### HOW QUICKLY CAN ZIRCONIA BE SINTERED?

The sintering time depends on the wall thickness and weight of the structure, the selected sintering program and the sintering furnace used. Structures with a high wall thickness must be sintered longer than thin structures. Sintering a smaller zirconia structure takes approx. 3 hours (with the Speed program). In the Zirkonofen Turbo sintering furnace specially designed for rapid sintering, this is possible in approx. 75 minutes with the appropriate sintering programs.

#### WHY SINTERING WITH VACUUM?

The vacuum function in the sintering furnaces is used to completely remove the oxygen from the combustion chamber and therefore also from the sinter metal pores. This increases material density.

When sintering sinter metal under high vacuum, undesirable reactions of the material with oxygen are prevented.

#### ARE TWO DIFFERENT FURNACES REQUIRED FOR SINTERING SINTER METAL?

No, both zirconia and Zirkonzahn's Sinternit can be sintered in the Zirkonofen 700 Ultra-Vakuum. For sintering Sinternit, it is necessary to use the Sinter Metal Furnace Adapter. Sinternit is thus sintered hermetically separated from the normal sintering chamber for zirconia. This ensures that no discolouration occurs during the subsequent sintering of zirconia. As usual, zirconia is sintered without the Sinter Metal Furnace Adapter.

#### IS IT POSSIBLE TO SINTER METAL AND ZIRCONIA AT THE SAME TIME?

No, because both materials have to be sintered with different sintering programms. Sinter metal may only be sintered under high vacuum.

#### IS IT POSSIBLE TO SINTER DIFFERENT TYPES OF ZIRCONIA AT THE SAME TIME?

In principle, this is possible if the zirconia materials, such as Prettau<sup>®</sup> 4 Anterior<sup>®</sup> and ICE Translucent, require the same sintering temperature. However, simultaneous sintering of different types of zirconia is not recommended, as the sintering curves (heating and cooling rates as well as the holding time) often differ. The required sintering temperature for the zirconia material to be sintered can be found in the instructions for use of the respective material.

### IS IT NECESSARY TO USE SINTERING POWDER WHEN SINTERING WITH THE ULTRASPEED PROGRAMS?

According to latest tests, the use of fine sintering powder is recommended when sintering with Ultraspeed programs. It is important to ensure that not too much sintering powder is used; only the bottom of the sintering tray should be covered with it. It is also important to place the structure to be sintered correctly on the sintering powder.

#### How to place a crown on the sintering powder?

*Correct placement of smaller crowns:* place the crown tips on the powder without sinking them into the powder. If the crown is buried too deep into the sintering powder, there will be a temperature difference between the part of the crown covered with powder and the part of the crown not covered with powder. This leads to stresses in the material, as there is no homogeneous temperature.

*Correct placement of molar crowns:* Place the crown with the chewing surface facing downwards into the sintering powder, otherwise the powder will get into the underside of the crown and become trapped during the shrinking process that occurs during sintering. This causes the crown to crack as the powder does not shrink.



Smaller crowns





Molar crowns

### WHY DO THE 600/V4 AND THE TURBO SINTERING FURNACES NEED AN INTERNET CONNECTION?

To ensure the full functionality of the sintering furnace, it should dispose of an existing Internet connection either via WiFi or LAN.

*This gives the device access to software updates, allowing efficiency, performance, stability etc. to be optimised.* 

*Furthermore, sintering programs from Zirkonzahn are constantly being developed and optimised and can be kept up to date by means of updates.* 

Software updates usually bring new functions for the customer that make everyday operation easier.

An Internet connection is required to use the Zirkonzahn. App so that the furnace can be monitored and notifications received via the smartphone.

#### IS A CERAMIC PROTECTION NECESSARY WHEN SINTERING ZIRCONIA?

The use of a ceramic protection is generally recommended to protect the zirconia from discolouration. However, please note that the ceramic protection must not be used with an Ultraspeed program. Alternatively, sintering trays can also be used for sintering smaller zirconia elements (up to max. 3 elements). Depending on the sintering furnace, up to three sintering trays can be stacked on top of each other so that up to 120 zirconia elements can be sintered at the same time. To avoid deformations, the base of the sintering tray should be covered with sintering powder.

# Zirkonzahn

### SINTERING FURNACES

Zirkonzahn Worldwide – Via An der Ahr 7 – 39030 Gais/South Tyrol T +39 0474 066 680 – F +39 0474 066 661 – www.zirkonzahn.com – info@zirkonzahn.com



This is an international advertisement. Not all products mentioned are available in all countries. The product's field of application may vary depending on the country. Please contact your sales team for more information. Copyright © Enrico Steger. Version: 22/04/2024