

# INSTRUCTION FOR USE

## Attention!

Please read the manual carefully before removing the white sintered zirconia blank out of the box. The manual contains important information for the correct processing and the safety of the user and your patients. Nacera® ZT white sintered blanks are produced and checked to the highest quality standards. In order to maintain this high quality throughout the entire process you have to follow the instructions carefully. Only by compliance you will avoid impairing the quality of the dental restoration.

## Security Advice

Processing the Nacera® ZT white sintered blanks and the dense sintered restorations created dust that might damage the lungs and can lead to irritation of the eyes and skin. Any machining is only allowed with a proper working suction system. The persons operating the machine should always wear goggles and a dust protection mask.

## Bio compatibility

Bio compatibility of yttria stabilized tetragonal zirconium oxide has been extensively tested. It is confirmed by more than 300.000 implants in hip joints. In dental prosthesis zirconium oxide is used for implant surgery, crowns and bridges for over 20 years with best results.

## General handling instructions

Nacera® ZT blanks are supplied in a white sintered state. At this stage they do have limited strength and still have a significant porosity. Therefore careful handling is required.

Please check the goods immediately after receipt for:

- > Integrity of the packaging
- > Integrity of the product (chipping, cracks or discoloration etc.)
- > Presence of a label with company name, lot number and article number of the white sintered parts

Storage must take place in original packaging in a dry place. Allowed temperatures range from 10° C to 50° C. The white sintered blanks must not suffer from vibrations or shock. In order to avoid contaminations blanks are to be touched with dry, clean hands and must not get in contact with liquids of any sort (water, glue, coloured pens and ink). In general any staining must be avoided. If any point in these instructions is not followed, the product is not released for the production of dental restorations.

## Indication:

The indication for the use of Nacera® ZT is the usage as framework for dental prosthesis single unit crowns up to 4 unit anterior bridges with maximum two pontics. It can also be used for fully anatomic crowns for a maximum of 3 units with one pontic in between. Fully anatomic restorations must be glazed. The material is suitable for the production of implant based crowns and bridges for both substructures and fully anatomic crowns.

## Contraindication:

An implant based antagonist is a contraindication for the use of implant based constructions. Cantilevered pontics are not allowed.

## Instructions for preparation

- > Prepare tooth with distinct chamfer or rounded shoulder
- > Cutting depth at the preparation margin at least 1mm
- > Remove 1,5 - 2 mm of occlusal / incisal tooth material
- > Edge radius: 0,7 mm
- > Preparation angle: 6° - 8°
- > For a bridge construction pay attention to parallelism and avoid undercuts.

## Advice on construction

- > In accordance to the general guidelines for fully ceramic restoration, the wall thickness should not be less than 0,4 mm.
- > The geometry of the connectors is crucial for the fracture resistance of frameworks made from zirconium oxide. Therefore the height of the connectors shall be as big as possible. The cross section of the connector must be at least 9 mm<sup>2</sup>. For the posterior regions there are no more than two pontics allowed between two abutment teeth.
- > To avoid chipping of the veneer material it is necessary to design the framework in an anatomical form to get a

constant thickness of the veneering material. If requested by the veneering material producer a liner must be applied. The construction of the framework must avoid that biting forces are directed to the side of the tooth.

- > Dental restorations made from Nacera® ZT blanks may only be processed with machines and tools suitable for the machining of white sintered or presintered zirconium oxide. While processing the blank must not be cooled with liquid or pressurized air.
- > Please follow also the manual of the milling machine. After milling, parts from Nacera® ZT must be examined carefully and checked for the following characteristics:
  - Shiny areas visible on surface
  - Discolouration
  - Chipping
  - Cracks

If any characteristics are evident, all parts made from this blank have to be destroyed.

- > For colouring the restorations you can use any dental colouring liquid you want. Please notice the handling advice of the manufacturer. Especially the drying recommendation has to be followed.

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### Sintering

Sintering gives the restoration the final properties. This is linked to a shrinkage with a defined factor. For the sintering a specified sintering cycle is necessary as this is a prerequisite for the reaching of the desired specification. Final sintering is performed in furnace approved for treating white sintered or presintered blanks from zirconium oxide. The sintering parameters must be in accordance with the following specifications and must not be changed.

#### Manufacturing Advice:

The dense parts should not be machined if possible. If this is not avoidable please use water cooled diamond tools in perfect state with grit larger than 100 µm. Measures have to be taken for the best possible cooling. Trim carefully, avoid excessive pressure. The thinner the wall thickness the more care is required. A minimum wall thickness of 0,4 mm must be ensured. Avoid grinding the interdental connectors especially the basal side. Don't grind carving notches on the basal side of the restoration.

Avoid sharp edges, try to round off edges. It is recommended not to sandblast the parts. If this is not possible a finishing of the restoration with alumina as media with grain size of ca. 120 µm and a pressure of 2 bar is recommended. A thorough washing with clean water should take place. Every crown and bridge must be checked for cracks with an indication fluid. If the parts have been excessively ground after sintering a healing sintering must be performed with a heating rate of 8°C/min, top temperature of 1055 °C at 5 min and natural cooling.

### Sintering of substructures:

Step	T in °C	T in °C	Time in h	Rate [°/min]	Rate [°/h]
1	20	1550	3:10	8,05	483,2
2	1550	1550	2:00	0,00	0,0
3	1550	20	3:10	- 8,05	- 483,2
3020	WAK = 10,6 10 <sup>-6</sup> K <sup>-1</sup>				

### Sintering of fully anatomic crowns and bridges:

Step	T in °C	T in °C	Time in h	Rate [°/min]	Rate [°/h]
1	20	990	2:00	8,08	485,0
2	990	1600	1:15	8,13	488,0
3	1600	1600	2:00	0,0	0,0
4	1600	20	3:15	-8,10	-486,2
3020	WAK = 10,6 10 <sup>-6</sup> K <sup>-1</sup>				

### Veneering

Veneering can be done with products approved for zirconium oxide according to the instructions of the manufacturers. Recommendations by DOCERAM Medical Ceramics GmbH:

- > Vita VM® 9
- > Cercon® ceram kiss
- > Vintage ZR / Shofu®
- > GC initial ZR
- > Nobel Rondo™ Zirconia

Notice the processing instructions of the manufacturers.

### Cementing:

Please use only materials which are suitable and proved in practice for cementing zirconium oxide. For cementing the frameworks you can use conventionally phosphate or glasionomer cement. Adhesive is also being indicated, if the material is recommended for restorations made of zirconium oxide. The manufacturer is responsible for the qualification of the material.

Made in Germany  
Dental ceramics acc. DIN EN ISO 6872, Type II class 6



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### Legend

-  Article Number
-  Instruction for use

-  Batch Code

**RX Only** For experts only

