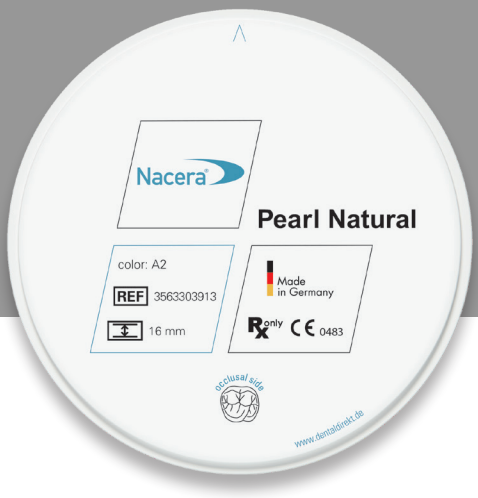
Nacera®
ADVANCED DENTAL SOLUTIONS

NACERA® PEARL NATURAL
SINTER GUIDE



Sintered correctly?

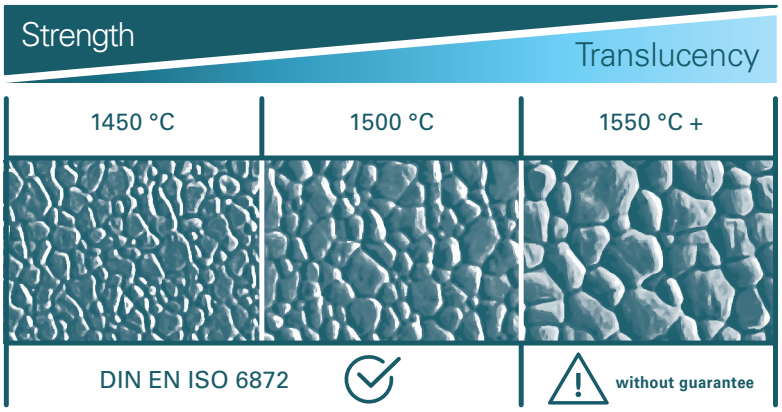
Do we really know if our zirconium dioxide crowns are sintered correctly? Or do we only know the sintering curve specified by the manufacturer, how to program this in our furnace and hope that everything inside the furnace works the way we want it to? Don't we also know the usual wear and tear in systems, which can gradually and unnoticed manifest itself in poorer results and thus poor aesthetics?

This problem becomes obvious when comparing several ovens directly, since the same results are rarely achieved here.

Background

The quality of sintering has a decisive influence on the strength and translucency of zirconium dioxide and thus also on material Nacera® Pearl Natural.

A very fine grain structure forms at a sintering temperature of 1450 °C and above. This shows high strength and sufficient translucency. If the temperature and thus the energyinput is increased, grain growth begins, which leads to icreasing translucencies, but also to lower strengths.



- A higher sintering temperature produces grain growth and increases translucency. Grain growth reduces strength and increases translucency.
- Increased grain growth leads to larger grain boundaries. Hydrothermal aging is greatly accelerated, and the strength and life span of the material decreases significantly.
- zirconium dioxide is a poor conductor of heat. The energy transport in and out of the material takes time. (Reduce the heating rate for large constructions).
- Slow cooling can improve translucency and counteract stresses in the material.

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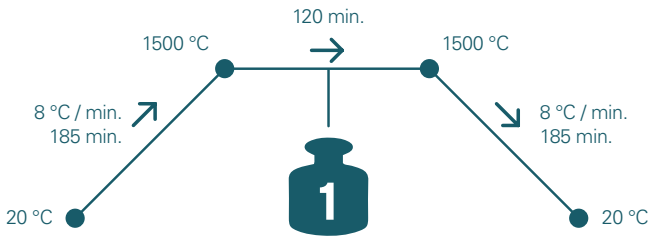
STANDARD PROGRAM

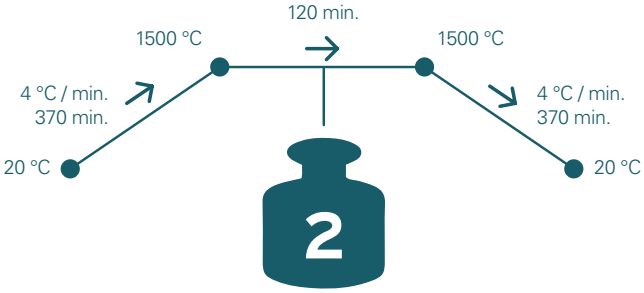
SMALL CONSTRUCTIONS / LOW MASS



Mass	Wall thickness crown	Wall thickness bridge
	0,50 mm – 2,00 mm	3,00 mm – 5,00 mm
1	Heating-/cooling rate/min.	
	8 °C	
	Holding time	
	120 Min.	

MASSIVE PROGRAM

SOLID CONSTRUCTIONS / HIGH MASS

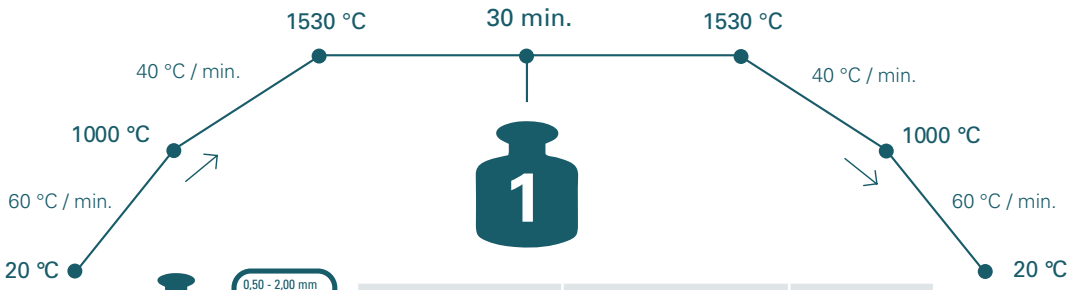


Mass	Wall thickness crown	Wall thickness bridge
	2,00 mm – 5,00 mm	5,00 mm – 9,00 mm
2	Heating-/cooling rate/min.	
	4 °C	
	Holding time	
	120 Min.	
Toronto	Heating-/cooling rate/min.	
	4 °C	
Toronto	Holding time	
	150 – 180 Min.	

Attention: For massive restorations, please adjust the rising rate during ceramic firing or glazing downward (Rise rate 35°C/min with natural cooling).

SPEED SINTER PROGRAM

MONOLITHIC SINGLE CROWNS



Wall thickness	Heating-/cooling rate	Holding time
0,50 mm – 2,00 mm	60 °C / 40 °C / min.	30 min.

- The flexural strength of crowns after speed sintering corresponds to the flexural strength of crowns, which are sintered as standard.
- Use only one sintering tray per speed sinter cycle.
- For max. 7 crowns with Ø 65 mm and max. 16 crowns with Ø 100 mm.
- Evaluated on DEKEMA 674i.