zirconat

advanced technology | dental ceramics

Instruction For Use

1984 ISO 13485 ISO 6872
ISO 9001

Ati advanced technology industry

Product Description

Zirconat® Dental Ceramic Blanks are pre-sintered Zirconia based Dental Ceramics and designed for dental laboratories and clinics to produce zirconia dental bridges, crowns, substructures, inlays, onlays and veneering applications by CAD (Computer Aided Design) and CAM (Computer Aided Manufacturing) operations with milling machines.

Chemical Composition	*Unit*	Y-TZP			
$ZrO_2 + HfO_2 + Y_2O_3$	*wt%*	≥98,5			
Y_2O_3	*mol%*	3-5			
Al_2O_3	*wt%*	<0,5			
Other oxides	*wt%*	<1			
Physical Properties	*Unit*	AHS	AHT	AST	AUT
Sintered Density	g/cm^3	~6,05			
Bending Strength *(3-point flexure)*	*Mpa*	>1100	>1000	>900	>600
Translucency *(1mm thickness)*	*%*	35	40	45	49
Coefficient of Thermal Expansion *(CTE)*	$10^{-6}/K$	~10,5			

Design Parameters

All values for sintered restorations.

Indication		Minimum Restoration Thickness *(mm)*			
		AHS	AHT	AST	AUT
Anterior	3-unit Bridges and substructures	0,5	0,5	0,6	0,9
	4-6-unit Bridges and substructures *(2 pontics)*	0,6	0,6	0,7	
	7-14-unit Bridges and substuctures *(2 pontics)*	0,7	0,7		
Posterior	3-unit Bridges and substructures	0,6	0,6	0,7	1
	4-6-unit Bridges and substructures *(2 pontics)*	0,7	0,7	0,8	
	7-14-unit Bridges and substuctures *(2 pontics)*	0,8	0,8		
Anterior / Posterior	Cantilever Bridges *(1 pontic)*	0,7	0,7	0,8	
	Crowns	0,5	0,5	0,6	0,8
	Veneers, Inlays and Onlays		0,5	0,6	0,8

Indications

Zirconat® Zirconia Dental Ceramic Blanks are medical devices for dental treatment which are used in dental applications for fabricating dental restorations like crowns, bridges, substructures, veneers, inlays and onlays.

Zirconat AHS : In anterior and posterior area;
- Fully veneered crown and bridge (≤14 units) substructures,

Zirconat AHT : In anterior and posterior area;
- Fully anatomical crowns and bridges (≤14 units),
- Fully veneered crown and bridge (≤14 units) substructures,
- Implant superstructures, veneers, inlays and onlays

Zirconat AST: In anterior and posterior area;
- Fully anatomical crowns and bridges (≤6 units),
- Fully veneered crown and bridge (≤6 units) substructures,
- Implant superstructures, veneers, inlays and onlays

Zirconat AUT: In anterior and posterior area;
- Fully anatomical crowns and bridges (≤3 units),
- Fully veneered crown and bridge (≤3 units)
- Veneers, inlays and onlays

Contraindications

- Bruxism
- Very short crown
- Parafunctional habbits
- Insufficient oral hygiene
- Insufficient hard dental tissue

Preparation

The CAD / CAM software instructions must be followed to scan and design restorations.
Zirconat Dental Ceramic Blanks should be used in accordance with the design and recommended parameters.
The successful design with the computer aided is the basis of durable ceramic restoration.

Shrinkage Factor (SF)

All Zirconat Dental Ceramic Blanks have a porous structure before sintering process. In the sintering process, a kind of compaction occurs which causes the restoration to shrink by approximately 20%. Therefore, all dental restorations should be milled according to the specified shrinkage factor, taking into account shrinkage during the sintering process.

The shrinkage factor ensures that dental restorations are optimally adapted after sintering.
Shrinkage factor (SF) and related Lot No are located on the product and packaging label.

Milling

- Carbide inserts should be used as a milling tool.
- Insert the blank in the machine according to the operating instructions of the CAM system.
- Start the milling process, taking care that the restoration thicknesses are adequate, and the positioning are correct.
- After finishing of the milling process, remove the blank from the CAM system and check for any damage.
- Remove the restoration from the blank with a diamond grinding tool.
- Carefully clean the restoration with a soft brush or oil-free compressed air.
- Care should be taken to avoid contamination after milling. Contamination can cause restorations to deteriorate during sintering.

Sintering

- Dental restoration before sintering should be sure that it is completely dry and clean.
- Sintering process will give restorations the ultimate physical properties such as high strength and translucency and the restorations will shrink to the final size during the process.
- During sintering, the restorations should not touch each other.
- Sintering Furnace should be programmed according to Zirconat Sintering Table below in accordance with instruction for use.

Step	Temperature *(°C)*	Temperature/Time *(°C/min)*	Time *(min)*
1	20 - 920	7,5	120
2	920 - 920	-	30
3	920 - 1460	3	180
4	1460 - 1460	-	120
5	1460 - 110	-9	150

After Sintering

- After sintering, at first defects and cracks should be checked.
- If necessary, the restorations can be retouched using a diamond-coated bur. However, the process should be done mechanically at minimum level. In addition, during the process should be careful with water cooling, overheating should be avoided.
- The restoration should be fitted to the model, its compatibility must be checked and, if necessary, marginal areas should be treated with minimal pressure. Sharp edges and angles should be targeted during the procedure. Minimum restoration thicknesses should be checked after complete the process.
- The restoration should be cleaned and dried with water or steam before veneering process.

Veneering

All veneering ceramics for zirconia restorations with a thermal expansion coefficient (CTE) of 10 - 11x10^{-6}/K are suitable for veneering Zirconat Dental Ceramic Blanks. The entire surface of the restoration should be completely covered with ceramic to form a homogeneous layer and the instructions for use of the selected veneering ceramic must be followed.

Safety

Personal protective equipments should be use during the process. (dust mask, protective glasses and gloves etc.)

Storage

It is recommended to store the product in its original packaging, at room temperature and in a dry indoor.

	Instructions for use		Caution
	Manufacturer		Date of Manufacture
	Catalogue Number		Use-by Date
	Batch Code		Keep Dry
	Do not use if package is damaged		Non-sterile
	EC Certificate		Do not re-use
	Turkish Standards Institution		Int. Organization for Standardization

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