

### THE **SECRET** BEHIND A CONFIDENT SMILE

PREMIUM QUALITY WITH 35 YEARS OF EXPERTISE  
IN HIGH PRECISION CERAMIC MANUFACTURING



You can see  
our video  
about our  
company.

# 100 YEAR WARRANTY



**INDUSTRIAL  
BACKGROUND**  
35 YEARS OF EXPERTISE  
IN HIGH PRECISION  
CERAMICS MANUFACTURING



Kerox is a 35+ year old high precision ceramics manufacturer based in the EU, with a production facility in Hungary.

## WE MANUFACTURE AND SELL OVER 80 MILLION HIGH TECH CERAMIC PRODUCTS ANNUALLY,

specializing in creating the highest quality dental zirconia on the market, which is backed up by our dedicated R&D and engineering team of 35 that only works on zirconia and alumina ceramics.

Kerox has a unique pressing and sintering technology. We combine the use of the most advanced qualifying methods and automatic inspection machinery, as well as demanding multi-stage quality control procedures including 100% inspection of all parts.

Our motto is **“No technological compromise to quality”**

We never compromise our high standards or cut corners. Utilizing the latest technology, the very best raw materials and most experienced professionals in the industry, our innovative high strength/high translucent dental zirconia products have quickly grown to be admired and used by lab technicians and dentists from all over the world.

Kerox has customers in more than 50 countries worldwide, including those in Europe, North America, South America, Asia, Australia and Africa, providing them superior customer service care, reliable on-time delivery and competitive prices.



## KEROX GROUP

- 300,000 ceramic parts capacity in 1 day
- More than 700 employees
- More than 35 engineers
- More than 20 press machines
- Two tunnel furnaces
- In-house tool shop
- Several fully automated assembly lines and devices for complex products



**MANUFACTURING PLANT:**  
22.000 m<sup>2</sup> / 250.000 ft<sup>2</sup>

# PRESSING: WHERE TECHNOLOGY MEETS TECHNIQUE

ZIRCOSTAR® Zirconia blanks are made with Yttria stabilized on every grain – manufactured with premium Japanese raw materials.

## CHEMICAL PROPERTIES

Ingredients	Weight percentage
ZrO <sub>2</sub>	90.2 – 94.3%
Y <sub>2</sub> O <sub>3</sub>	5.7 – 9.8%
Al <sub>2</sub> O <sub>3</sub>	< 0.25%
SiO <sub>2</sub>	< 0.02%
Fe <sub>2</sub> O <sub>3</sub>	< 0.02%
Na <sub>2</sub> O	< 0.02%

## PHYSICAL PROPERTIES

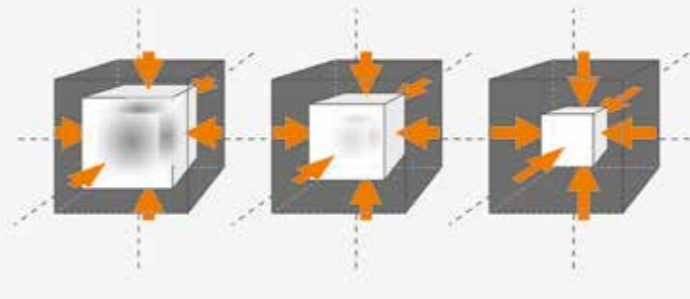
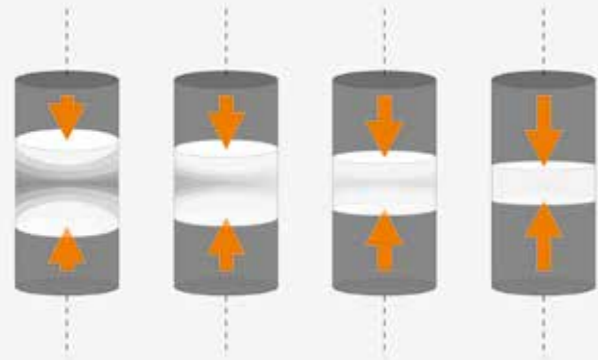
Typical properties of sintered body	
Density (g/cm <sup>3</sup> )	6.05
Bending strength (MPa)	1500
Surface hardness (HV10)	1250
Radioactivity (Bq/g)	< 0.01

### AXIAL PRESSING ALONE IS INSUFFICIENT

If used alone, will create uneven density, shrinkage and hardness in the blank.

### COLD ISOSTATIC PRESSING

- Extreme pressure
- Even densification & mass
- Less porosity
- Less unevenness
- Maximum homogeneity



## KEROX DENTAL MULTI PRESSING<sup>+</sup>

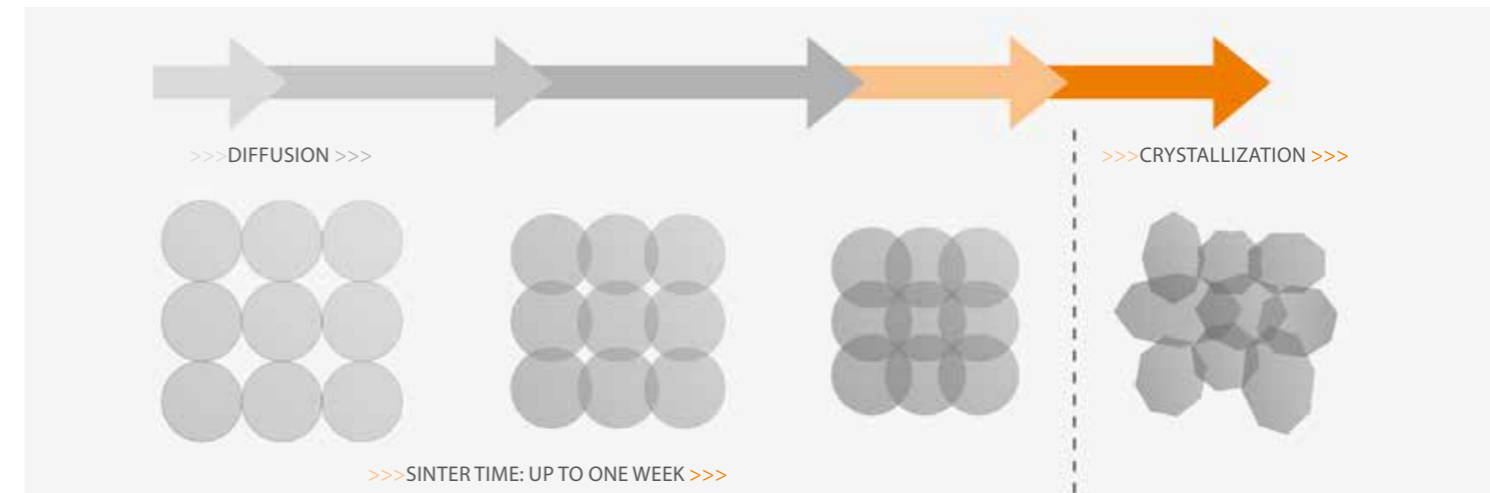
Axial pressing is not enough, properly manufactured dental zirconia needs to be pressed from all sides. Cold Isostatic pressing is time-consuming, but the extreme pressure applied ensures maximum homogenous density in all Kerox blanks.

Optimal blank porosity and density also increases lifetime of milling machines and burrs.

# SINTERING: THE BASICS

## Pre-sintering At Kerox

## Final Sintering In Your Lab



### PRE-SINTER

“Neck formation” by diffusion during pre-sintering. Ensures best crystal sizes and mechanical properties.

### FINAL SINTER

Particles melted, density increased, pore sizes decreased at final sinter. Ensures final metastable tetragonal structure.

Pressing and pre-sintering can be challenging

Underpressed and oversintered ▶ low density, too hard ▶  
Overpressed and undersintered ▶ high density, too soft ▶

results in cracking and chipping  
results in breaking

## OPTIMAL PROCESS

Kerox measures density to optimize quality. Anything less than optimal pressing and sintering will lead to chipping or breaking during the milling process. Kerox's extensive experience with pressing and sintering provides labs with zirconia blanks that have the perfect combination of density, strength and millability.

By perfecting the right combination of raw materials, particle sizes, pressing protocols and sintering curves, Kerox has mastered the art of producing premium dental zirconia

AND THE FINAL PRODUCT IS A PREMIUM ZIRCONIA WITH A FLEXURAL STRENGTH OF UP TO 1443 MPa AND COMES WITH **100 YEAR WARRANTY.**

# ZIRCOSTAR® ZIRCONIA

## MATERIALS FOR EVERY RESTORATION



### HIGH TRANSLUCENT (HT)

**Compatible system:** 71, 95, 98, 100

**Available sizes:** 10mm, 12mm, 14mm, 16mm, 18mm, 20mm, 25mm

**Strength:** up to 1350 MPa

- ✓ Applications: full contour, frameworks, inlays, onlays, crowns, copings
- ✓ Ideal for long-span monolithic bridges
- ✓ Ideal for cut-back technology
- ✓ High flexural strength and high translucency

High Translucent (HT)			
Benefits	Very versatile material High strength and high translucency	Radioactivity	13 Bq/ug
Usage	Full contour and frameworks	Flexural Strength*	1350 MPa
Colors	White, Pre-shaded (A1, A2, A3, B2, D2)	Fracture Toughness**	12,27 MPam <sup>1/2</sup>
System & Sizes	71, 95, 98, 100 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 25 mm	CTE	9,9 × 10 <sup>-6</sup> × 1 °C
		Glass transition temperature non under	1400 °C
		Chemical Solubility	16,1 g/cm <sup>2</sup>
		Bulk Density	6,05 g/cm <sup>3</sup>
		ZrO <sub>2</sub> +Hf O <sub>2</sub> +Y <sub>2</sub> O <sub>3</sub>	99,8%

Type II, Class 5 (ISO 6872:2015)

\*Highest value measured by FKG Lab Germany

\*\*Measured Vickers Indentation

### ULTRA HIGH TRANSLUCENT (UHT)

**Compatible system:** 71, 95, 98, 100

**Available sizes:** 10mm, 12mm, 14mm, 16mm, 18mm, 20mm, 25mm

**Strength:** Up to 1175 MPa

- ✓ Applications: anterior and posterior, inlays onlays, crowns
- ✓ Single crowns & long span bridges
- ✓ 49% Translucency

Ultra High Translucent (UHT) was developed to have aesthetics that resemble that of natural teeth. Not only does it come with lithium disilicate like translucency, but it's three times stronger at 1175 MPa. It's optimal for full contour anterior restorations, but can also be used in the posterior due to the hard density of the material.



### HIGH STRENGTH (HS)

**Compatible system:** 71, 95, 98, 100

**Available sizes:** 10mm, 12mm, 14mm, 16mm, 18mm, 20mm, 25mm

**Strength:** up to 1443MPa

- ✓ Applications: PFZ substructures, crowns, copings, long span bridges
- ✓ High flexural strength and low translucency
- ✓ Opacity covers abutments perfectly

High Strength (HS) zirconia has optimal milling properties and is recommended for porcelain fused to zirconia framework restorations. The material accepts porcelain layering exceptionally well and its low translucency perfectly covers abutments. It comes with an extremely high flexural strength (close to 1500 MPa) and higher fracture toughness for long span bridges and difficult jobs where additional strength is required.

Ultra High Translucent (UHT)			
Benefits	49% Translucency Viable alternative to Lithium Disilicate	Radioactivity	11 Bq/ug
Usage	Monolithic anterior and posterior restorations	Flexural Strength*	1175 MPa
Colors	White Pre-shaded (A1, A2, A3, B2, D2)	Fracture Toughness**	5,03 MPam <sup>1/2</sup>
System & Sizes	71,95,98,100 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 25 mm	CTE	9,6 × 10 <sup>-6</sup> × 1°C
		Glass transition temperature non under	1400 °C
		Chemical Solubility	1,8 g/cm <sup>2</sup>
		Bulk Density	6,05 g/cm <sup>3</sup>
		ZrO <sub>2</sub> +Hf O <sub>2</sub> +Y <sub>2</sub> O <sub>3</sub>	99,8%

Type II, Class 5 (ISO 6872:2015)

\*Highest value measured by FKG Lab Germany

\*\*Measured Vickers Indentation

High Strength (HS)			
Benefits	Our highest strength zirconia Low translucency to cover abutments optimal milling properties	Radioactivity	15 Bq/ug
Usage	Frameworks	Flexural Strength*	1443 MPa
Colors	White, Pre-shaded (AB LIGHT, AB DARK, CD LIGHT, CD DARK)	Fracture Toughness**	10,72 MPam <sup>1/2</sup>
System & Sizes	71,95,98,100 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 25 mm	CTE	10,3 × 10 <sup>-6</sup> × 1 °C
		Glass transition temperature non under	1400 °C
		Chemical Solubility	5,4 g/cm <sup>2</sup>
		Bulk Density	6,05 g/cm <sup>3</sup>
		ZrO <sub>2</sub> +Hf O <sub>2</sub> +Y <sub>2</sub> O <sub>3</sub>	99,8%

Type II, Class 5 (ISO 6872:2015)

\*Highest value measured by FKG Lab Germany

\*\*Measured Vickers Indentation

# MULTILAYER

## ZIRCOSTAR® MULTILAYER HTML&UTML



### WHY KEROX MULTILAYER?

- ✓ High Translucency, for life-like esthetics
- ✓ High strength, for unparalleled mechanical properties
- ✓ Undefined layers → more homogeneous gradients
- ✓ Perfect Vita® Match



HTML High Translucent Multilayer		UTML Ultra high Translucent Multilayer	
Compatible With 71, 95 and 98 systems			
Available in 14 MM and 20MM Thickness			
Available shades: A1, A2, A3, B2, D2			
Applications	Full contour crowns & bridges Up to 3 units	Applications	Full contour crowns & bridges Up to 3 units For anterior restorations
Radioactivity	14 Bq/ug	Radioactivity	9 Bq/ug
Flexual Strength*	1389 MPa	Flexual Strength*	746 MPa
Fracture Toughness**	6,54 MPam <sup>1/2</sup>	Fracture Toughness**	4,67 MPam <sup>1/2</sup>
CTE	10,0 × 10 <sup>-6</sup> × 1°C	CTE	9,6 × 10 <sup>-6</sup> × 1°C
Glass transition temperature non under	1400 °C	Glass transition temperature non under	1400 °C
Chemical Solubility	1,1 g/cm <sup>2</sup>	Chemical Solubility	1,3 g/cm <sup>2</sup>
Bulk Density	6,05 g/cm <sup>3</sup>	Bulk Density	6,05 g/cm <sup>3</sup>
ZrO <sub>2</sub> +Hf O <sub>2</sub> +Y <sub>2</sub> O <sub>3</sub>	99,8%	ZrO <sub>2</sub> +Hf O <sub>2</sub> +Y <sub>2</sub> O <sub>3</sub>	99,8%

Type II, Class 4a (ISO 6872:2015)  
\*Highest value measured by FKG Lab Germany  
\*\*Measured Vickers Identification

Type II, Class 4a (ISO 6872:2015)  
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## KEROX ON-SITE TECHNICAL SUPPORT

MAXIMIZING AESTHETICS  
AND PRODUCTIVITY

### KEROX DENTAL TECHNICIANS AND CERAMICS ENGINEERS PROVIDE ON-SITE SUPPORT IN YOUR DENTAL LAB

Kerox customer support is truly world class! No matter where you are in the world, if you have any issue that requires some personal attention, we will fly our lab technicians to you.

We don't just sell products, we are interested in long-term partnerships and making sure you always have your processes 100% dialed in from A-Z.

If you don't require a personal visit, we offer live Skype support from our lab to yours. Email and phone support is also available with your personal representative 7 days a week.

### WE CUSTOMIZE INDIVIDUAL SOLUTIONS FOR YOU

- We adjust your milling strategies and advise on burrs, for improved aesthetics and cost savings.
- Labs often find coloring to be inconsistent, we help refine the process no matter what staining system you use.
- Sintering can determine the strength and translucency of the final product. Our ceramics engineers help optimize your furnace settings to not only maximize strength and translucency, but to also save on sinter time and preserve your heating elements.



### WARNING!

Before using our ZIRCOSTAR® zirconia blanks, please carefully read and follow the instructions in the user manual. We are confident in the quality of our products, therefore we offer 100 years warranty on the crowns and substructures made of our ZIRCOSTAR® zirconia blanks. This means if the issue of the restoration is due to a failure in our ZIRCOSTAR® zirconia blanks, the blanks will be replaced by Kerox.

# QUALITY IS IN THE PROCESS

## 100% QUALITY CONTROL



### QUALITY & INNOVATION COMMITMENT

Ongoing research, 100% quality checks and procedures ensure premium quality zirconia blocks for CAD/CAM dental restorations (crowns, bridges, long structures, inlays, and onlays).

This quality commitment contributes to our 100 year warranty. Units created with ZIRCOSTAR® zirconia will not break if fabricated in compliance with the manufacturer's instructions and in accordance with professional processing standards.

It's very rare that our materials fail, but in case they do, Kerox provides peace of mind and confidence to keep your business moving forward.

### QUALITY MANAGEMENT

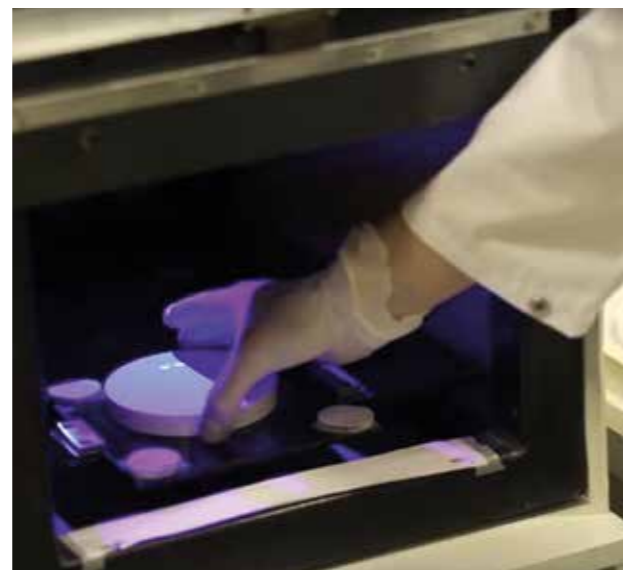
- Failure Modes and Effects Analysis (FMEA) process
- Statistical Process Control
- Kerox stores lot numbers and individual serial numbers in a database for future traceability and claim handling.
- Quality Control Procedures
- Certified Quality Management System: ISO 9001:2015  
ISO13485:2016



LOOK INTO  
THE WORLD OF  
KEROX DENTAL  
PREMIUM QUALITY ZIRCONIA  
WITH 100 YEAR WARRANTY



100 YEAR  
WARRANTY





*Kerox is not your average zirconia company, we have been manufacturing high-tech precision ceramics for over 35 years.*

*Ceramics is what we know and we do it the best!*



**KEROX**  
**DENTAL**

**KEROX Ltd.**

Kerox St. 1, Sósút, 2038 Hungary-EU

Phone: +36 23 560 700 EXT155

Fax: +36 23 545 215

E-mail: [info@keroxdental.net](mailto:info@keroxdental.net)

[www.keroxdental.com](http://www.keroxdental.com)