KEROX DENTAL

PREMIUM ZIRCONIA SOLUTIONS

THE SECRET BEHIND A CONFIDENT SMILE

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

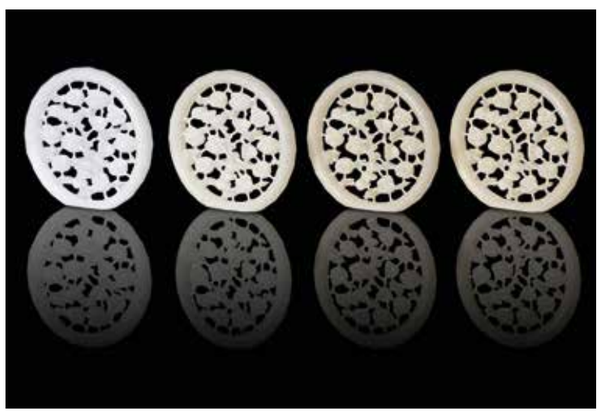
100 YEAR WARRANTY

You can see our video about our company.

www.keroxdental.com

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 m² / 250.000 ft²

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_2	90.2 – 94.3%
Y_2O_3	5.7 – 9.8%
Al_2O_3	< 0.25%
SiO_2	< 0.02%
Fe_2O_3	< 0.02%
Na_2O	< 0.02%

PHYSICAL PROPERTIES

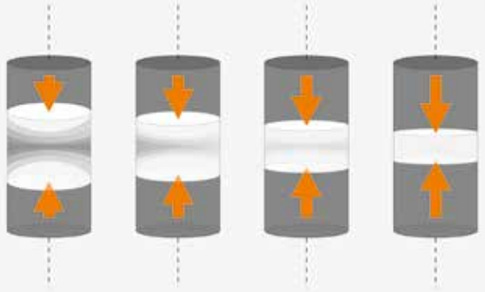
Typical properties of sintered body	
Density (g/cm³)	6.05
Bending strength (MPa)	1500
Surface hardness (HV10)	1250
Radioactivity (Bq/g)	< 0.01

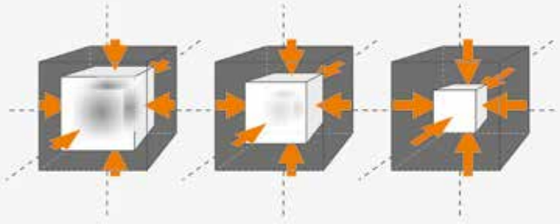
AXIAL PRESSING ALONE IS INSUFFICIENT

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





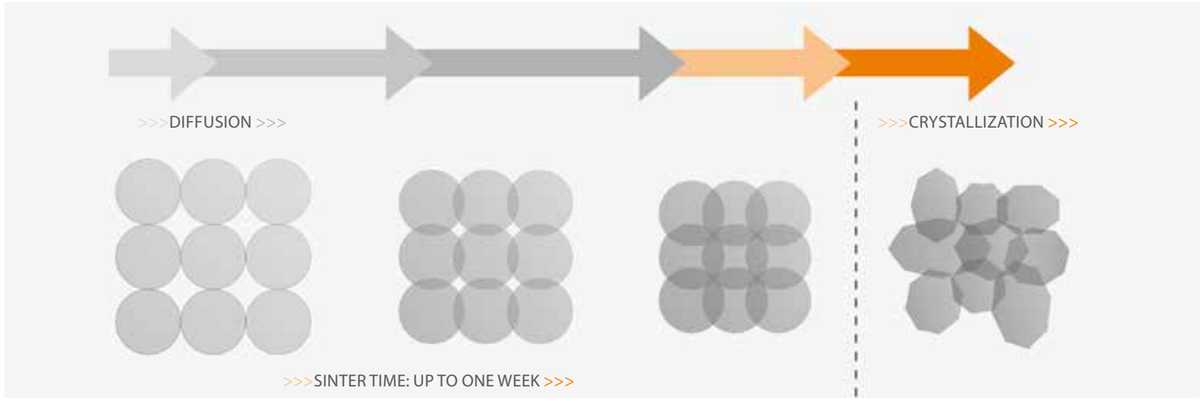
KEROX DENTAL MULTI PRESSING

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 ▶ results in cracking and chipping
Overpressed and undersintered ▶ high density, too soft ▶ 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

SHADES

WHITE A1 A2 A3 B2 D2

ULTRA HIGH TRANSLUCENT (UHT)

Compatibile system: 71, 95, 98, 100

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

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.

	Ultra High Translucent (UHT)		
Benefits	49% Translucency Viable alternative to Lithium Discilicate	Radioactivity	11 Bq/ug
Usage	Monolithic anterior and posterior restorations	Flexual Strength*	1175 MPa
Colors	White Pre-shaded (A1, A2, A3, B2, D2)	Fracture Toughness**	5,03 MPam½
System & Sizes	71,95,98,100 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 25 mm	CTE	$9,6 \times 10^{-6} \times 1$ °C
		Glass transition temperature non under	1400 °C
		Chemical Solubility	1,8 g/cm²
		Bulk Density	6,05 g/cm³
		ZrO_2+Hf O_2+Y_2O_3	99,8%

Type II. Class 5 (ISO 6872:2015)
*Highest value measured by FKG Lab Germany
**Measured Vickers Identation

SHADES

WHITE A1 A2 A3 B2 D2

HIGH TRANSLUCENT (HT)

Compatibile system: 71, 95, 98, 100

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

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	Flexual Strength*	1350 MPa
Colors	White, Pre-shaded (A1, A2, A3, B2, D2)	Fracture Toughness**	12,27 MPam½
System &Sizes	71, 95, 98, 100 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 25 mm	CTE	$9,9 \times 10^{-6} \times 1$ °C
		Glass transition temperature non under	1400 °C
		Chemical Solubility	16,1 g/cm²
		Bulk Density	6,05 g/cm³
		ZrO_2+Hf O_2+Y_2O_3	99,8%

Type II. Class 5 (ISO 6872:2015)
*Highest value measured by FKG Lab Germany
**Measured Vickers Identation

SHADES

WHITE AB LIGHT AB DARK CD LIGHT CD DARK

HIGH STRENGTH (HS)

Compatibile system: 71, 95, 98, 100
Available sizes: 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 25 mm
Strength: up to 1443MPa

- Applications: PFZ substructures , crowns, copings, long span bridges
- High flexural strength and low translucency
- Opaqueness 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.

	High Strength (HS)		
Benefits	Our highest strength zirconia Low translucency to cover abutments optimal milling properties	Radioactivity	15 Bq/ug
Usage	Frameworks	Flexual Strength*	1443 MPa
Colors	White, Pre-shaded (AB LIGHT, AB DARK, CD LIGHT, CD DARK)	Fracture Toughness**	10,72 MPam½
System &Sizes	71,95,98,100 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 25 mm	CTE	$10,3 \times 10^{-6} \times 1$ °C
		Glass transition temperature non under	1400 °C
		Chemical Solubility	5,4 g/cm²
		Bulk Density	6,05 g/cm³
		ZrO_2+Hf O_2+Y_2O_3	99,8%

Type II. Class 5(ISO 6872:2015)
*Highest value measured by FKG Lab Germany
**Measured Vickers Identation

MULTILAYER

ZIRCOSTAR® MULTILAYER HTML&UTML

WHY KEROX MULTILAYER?

- High Translucency, for life-like esthetics
- High strength, for unparalelled 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 sades: A1, A2, A3, B2, D2			
Applications	Full contour crowns & bridges Up to 3 units	Applications	Full contour crowns & bridges Up to 3 units For antierior restorations
Radioactivity	14 Bq/ug	Radioactivity	9 Bq/ug
Flexual Strength*	1389 MPa	Flexual Strength*	746 MPa
Fracture Toughness**	6,54 MPam½	Fracture Toughness**	4,67 MPam½
CTE	$10{,}0\times10^{-6}\times1°C$	CTE	$9{,}6\times10^{-6}\times1°C$
Glass transition temperature non under	1400 °C	Glass transition temperature non under	1400 °C
Chemical Solubility	1,1 g/cm²	Chemical Solubility	1,3 g/cm²
Bulk Density	6,05 g/cm³	Bulk Density	6,05 g/cm³
ZrO_2+Hf O_2+Y_2O_3	99,8%	ZrO_2+Hf O_2+Y_2O_3	99,8%

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

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

KEROX ON-SITE TECHNICAL SUPPORT

MAXIMIZING AESTHETICS AND PRODUCTIVITY

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.

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.

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).

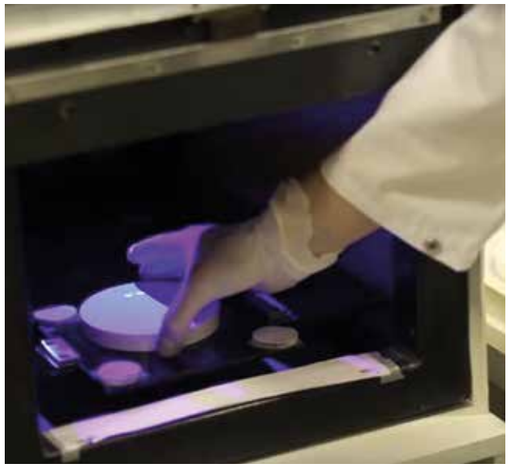
This quality commitment contributes to our 100 year warranty. Units created with ZIRCOSTAR® zirconia will not break if fabricated in compliance with the manufacturer's instructions and in accordance with professional processing standards.

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

100 YEAR
WARRANTY



LOOK INTO THE WORLD OF KEROX DENTAL

PREMIUM QUALITY ZIRCONIA WITH 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!

FDA APPROVED

KEROX DENTAL

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