KEROX DENTAL

PREMIUM ZIRCONIA SOLUTIONS

THE SECRET BEHIND A CONFIDENT SMILE

PRODUCT CATALOGUE

LIFETIME
WARRANTY

POLYDENT, S.L.
MATERIAL DENTAL

www.keroxdental.com

» WORLD CLASS CUSTOMER SUPPORT » PREMIUM EUROPEAN QUALITY

INDUSTRIAL BACKGROUND

40 YEARS OF EXPERTISE IN HIGH PRECISION CERAMICS MANUFACTURING

QUALITY MANAGEMENT

- 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, ISO 13485:2016, ISO 14001:2015**

QUALITY & INNOVATION COMMITMENT

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

This quality commitment contributes to our lifetime warranty.

Kerox is a 40 year old high precision ceramics manufacturer based in the EU, with a production facility in Hungary.

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

specializing in creating **the highest quality dental zirconia on the market**. This is backed up by our dedicated R&D and engineering team of 40 professionals.

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 80 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

- 350,000 ceramic parts per 1 day
- More than 800 employees
- More than 40 engineers
- More than 20 press machines
- Two tunnel furnaces
- In-house tool shop
- Several fully automated assembly lines and devices for complex products

WHY ZIRCONIA?

Ceramic materials are suitable for the preparation of durable and aesthetic dental restorations. Zirconia ceramic material offers a wide range of dental applications due to its high flexural strength and fracture toughness values. Due to the mechanical properties and the natural, tooth-like appearance as well as the high grade of biocompatibility the Kerox Zircostar blanks can be used on a wide range of tooth restoration types.

SCIENCE AND TECHNOLOGY BEHIND ZIRCOSTAR®

BACK TO SCIENTIFIC BASICS

Zirconia as a dental ceramic is a synthetic material which exists in three different crystal structures. The polymorph materials' phases change depending on the temperature and pressure. This transformation phenomenon is reversible. The most stable crystal structures exist in higher temperatures only. Cooling leads to further stress in the crystal structure of the sintered ceramics which results and promote fracture and cracks. To avoid the rigidity, it needs stabilizing components like yttria (Y_2O_3) or other rare-earth oxides. By adding these substituents to the zirconia, the result is partially or fully stabilized crystal structure. Due to this "little chemical spell" ceramics with remarkable mechanical and chemical properties could be created.

HOW IT'S MADE?!

First of all, fine and pure raw material powders are essential to produce dental ceramics.

The manufacturing TECHNOLOGY is the key to achieve the unique structure of the zirconia ceramic. Kerox Ltd. uses conventional ceramic technology for the preparation of ZIRCOSTAR® pre-sintered zirconia blanks for CAD/CAM dental applications.

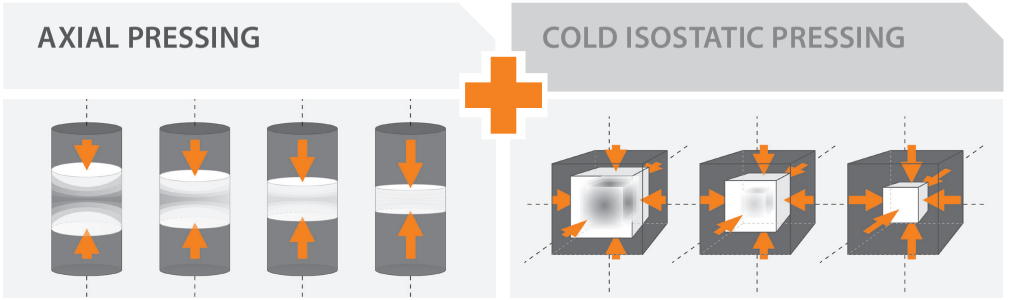
TYPICAL COMPOSITION of Kerox ZIRCOSTAR® zirconia ceramics

Oxide component	Content (by weight percent)
ZrO_2	90.2-94.3 wt%
Y_2O_3	5.7-9.8 wt%
Al_2O_3	<0.25 wt%
SiO_2	<0.02 wt%
Fe_2O_3	<0.02 wt%
Na_2O	<0.02 wt%

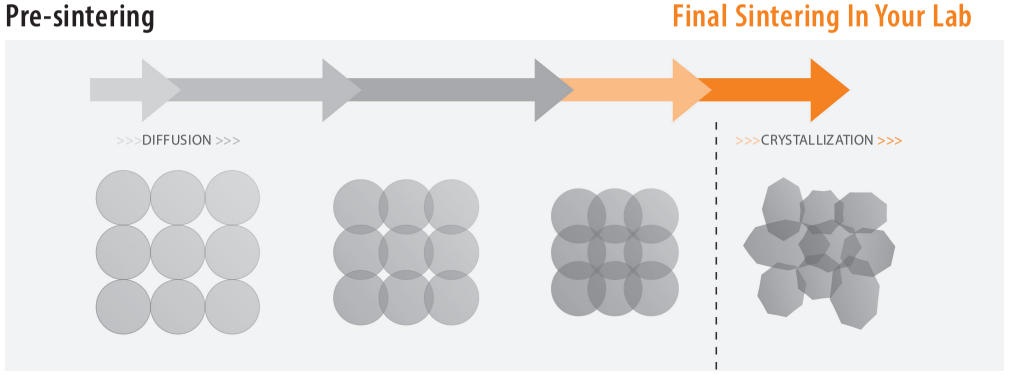
THE MANUFACTURING TECHNOLOGY CONSISTS OF THE FOLLOWING WELL-HARMONIZED MAIN STEPS:

01 POWDER MIXING
02 AXIAL PRESSING
03 COLD ISOSTATIC PRESSING
04 PRE-SINTERING
05 EVALUATION, TESTS AND MEASUREMENT
06 PACKING AND DELIVERING

MULTI PRESSING: THE BASICS



SCHEMATIC REPRESENTATION OF SINTERING MECHANISM



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.

This refined technology is optimized for the highest quality raw materials and helps us to achieve the most durable and aesthetic dental ceramic materials. The pre-sintered ZIRCOSTAR® zirconia blanks, are tested in our CAD/CAM milling laboratory to deliver the best quality to technician experts. Easy machinability, crack- and chipping-less workpieces can be ensured by the usage of homogeneous ZIRCOSTAR® pre-sintered zirconia blanks. Kerox evaluates and calculates the shrinkage factor in case of every single product individually for the predictable preparation and final sintering processes. ZIRCOSTAR® subtypes were developed to achieve the best result with the combination of excellent mechanical properties with lifelike aesthetic in every solution.

MULTILAYER PRODUCTS
ZIRCOSTAR® 3D MULTILAYER

WITH OUR SPECIAL PRESSING TECHNOLOGY, THESE LAYERS BECOME COMPLETELY TRANSIENT, SO WE CAN SAY THAT THE LAYERS OF OUR MULTI-LAYERED BLANKS ARE NOT COUNTABLE, THEY ARE “INNUMERABLE”.

AVAILABLE SHADES

Zircostar® 3D Multilayer, a revolution in dental materials that was developed to be as lifelike as possible, with 5 layers of different translucency and colour from the gingiva to the incisal part of the tooth. Saving time and money for dental technicians, there is no need for any additional characterization for the restorations made out of this translucent and strong zirconia.

3D MULTILAYER (3DML)

Compatible milling systems:

Available thicknesses: 16 mm, 20 mm

Strength: up to 1085 MPa

Applications: bridge, veneer, inlay/onlay, anterior/posterior

- 5 layers optimized for best combination of strength and translucency
- Environmentally friendly production

TYPICAL PROPERTIES OF SINTERED BODY	
Radioactivity	156 Bq/kg
Flexural Strength*	820 / 940 / 1085 MPa
Fracture Toughness**	4,1 / 5,4 / 7,8 MPa $m^{½}$
CTE	10 × 10^{-6} 1/°C
Chemical Solubility	1,1 µg/cm^2
Bulk Density	6,06 g/cm^3
ZrO_2+HfO_2+Y_2O_3	99,80%

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

MULTILAYER PRODUCTS
ZIRCOSTAR® UTML&HTML

AVAILABLE SHADES

ULTRA TRANSLUCENT MULTILAYER (UTML)

Compatible milling systems:

Available thicknesses: 14 mm, 20 mm

Strength: up to 746 MPa

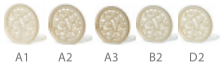
Applications: anterior, posterior, full contour crowns and bridges, inlay/onlay

- Can be used for 3-unit bridge
- High strength and high translucency
- Perfect shrinkage

TYPICAL PROPERTIES OF SINTERED BODY	
Radioactivity	< 9 Bq/kg
Flexural Strength*	746 MPa
Fracture Toughness**	4,67 MPa $m^{½}$
CTE	9,6 × 10^{-6} 1/°C
Chemical Solubility	1,3 µg/cm^2
Bulk Density	6,05 g/cm^3
ZrO_2+HfO_2+Y_2O_3	99,80%

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

AVAILABLE SHADES



HIGH TRANSLUCENT MULTILAYER (HTML)

Compatible milling systems:

Available thicknesses: 14 mm, 20 mm

Strength: up to 1389 MPa

Applications: posterior, full contour crowns and bridges, inlay/onlay, veneer

- Can be used for 3-unit bridge
- High strength and high translucency
- Perfect shrinkage

TYPICAL PROPERTIES OF SINTERED BODY	
Radioactivity	< 14 Bq/kg
Flexural Strength*	1389 MPa
Fracture Toughness**	6,54 MPa $m^{½}$
CTE	10,3 × 10^{-6} 1/°C
Chemical Solubility	1,1 µg/cm^2
Bulk Density	6,06 g/cm^3
ZrO_2+HfO_2+Y_2O_3	99,80%

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

MONOLITHIC
ZIRCOSTAR® UHT&HT

AVAILABLE SHADES

*WHITE WITH FARBEN
16 VITA SHADES AVAILABLE

ULTRA HIGH TRANSLUCENT (UHT)

Compatible milling systems:

Available thicknesses: 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 22 mm, 25 mm
Strength: up to 1175 MPa
Applications: anterior, posterior, crown, bride, inlay/onlay

- Can be used for 3-unit bridge
- 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.

TYPICAL PROPERTIES OF SINTERED BODY	
Radioactivity	< 11 Bq/kg
Flexural Strength*	1175 MPa
Fracture Toughness**	5,03 MPa $m^{½}$
CTE	9,6 × 10^{-6} 1/°C
Chemical Solubility	1,8 µg/cm^2
Bulk Density	6,05 g/cm^3
ZrO_2+HfO_2+Y_2O_3	99,80%

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

AVAILABLE SHADES

*WHITE WITH FARBEN
16 VITA SHADES AVAILABLE

HIGH TRANSLUCENT (HT)

Compatibile milling systems:

Available thicknesses: 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 22 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

TYPICAL PROPERTIES OF SINTERED BODY	
Radioactivity	< 13 Bq/kg
Flexural Strength*	1350 MPa
Fracture Toughness**	12,27 MPa $m^{½}$
CTE	9,9 × 10^{-6} 1/°C
Chemical Solubility	16,1 µg/cm^2
Bulk Density	6,05 g/cm^3
ZrO_2+HfO_2+Y_2O_3	99,80%

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

MONOLITHIC
ZIRCOSTAR® HS

AVAILABLE SHADES

*WHITE WITH FARBEN
16 VITA SHADES AVAILABLE

HIGH STRENGTH (HS)

Compatibile milling systems:

Available thicknesses: 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 22 mm, 25 mm
Strength: up to 1443 MPa
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.

TYPICAL PROPERTIES OF SINTERED BODY	
Radioactivity	< 15 Bq/kg
Flexural Strength*	1443 MPa
Fracture Toughness**	10,72 MPa $m^{½}$
CTE	10,3 × 10^{-6} 1/°C
Chemical Solubility	5,4 µg/cm^2
Bulk Density	6,05 g/cm^3
ZrO_2+HfO_2+Y_2O_3	99,80%

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

ZIRCOSTAR® ZIRCONIA
FARBEN, EFFEKTEN, MARKERS

- **Farben** – colouring liquid (pre-sintering):
  16 shades for the entire chromatic spectrum of the VITA classic shade guide
- **Effekten** – effects (pre-sinter):
  Gums: Pink Light, Pink dark
  Cervical & Fissures: brown
  Translucency: Tr-Grey
- **Markers:** supporting multi-brushing and multilayering

Kerox Farben® colouring liquid
Kerox Effekten® colouring liquid
Markers

KEROX DENTAL
PRODUCT SHEET

	MODEL	INDICATIONS: anterior	posterior	crown	bridge up to 3	bridge up to 6	full bridge	coping	substructure	inlay / onlay	veneer	STRENGTH (MPa)**	TRANSLUCENCY (%)	AVAILABLE SHADES	COMPATIBLE MILLING SYSTEMS	AVAILABLE THICKNESS
KEROX MULTILAYERS	3D Multilayer (3DML)	✓✓	✓✓	✓✓	✓✓	✓✓				✓	✓✓	up to 820 MPa- 1085 MPa	43%-49%	A1, A2, A3, B1, B2, D2, Bleach 1, Bleach 2	98 mm, 95 mm, 71 mm	16 mm 20 mm
	Ultra High Translucent Multilayer (UTML)	✓✓	✓	✓✓	✓✓	✓✓				✓	✓	up to 746 MPa	49%	A1, A2, A3, B2, D2	98 mm, 95 mm, 71 mm	14 mm 20 mm
	High Translucent Multilayer (HTML)	✓	✓✓	✓✓	✓✓	✓✓	✓✓			✓✓		up to 1389 MPa	45%	A1, A2, A3, B2, D2	98 mm, 95 mm, 71 mm	14 mm 20 mm
KEROX MONOLITHIC	Ultra High Translucent (UHT)	✓✓	✓	✓✓	✓✓	✓✓	✓✓			✓	✓	up to 1175 MPa	49%	white, A1, A2, A3, B2, D2, bleach	98 mm, 95 mm, 71 mm, 100 mm	10 mm 12 mm 14 mm 16 mm 18 mm 20 mm 22 mm 25 mm
	High Translucent (HT)	✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓	✓✓	✓✓		up to 1350 MPa	43%	white, A1, A2, A3, B2, D2, bleach	98 mm, 95 mm, 71 mm, 100 mm	10 mm 12 mm 14 mm 16 mm 18 mm 20 mm 22 mm 25 mm
	High Strength (HS)				✓✓	✓✓	✓✓	✓✓	✓✓			up to 1443 MPa	41%	white AB light AB dark CD light CD dark	98 mm, 95 mm, 71 mm, 100 mm	10 mm 12 mm 14 mm 16 mm 18 mm 20 mm 22 mm 25 mm

✓✓ approved and recommended by Kerox Dental
✓✓ product is suitable for use
✓✓ can be used but only with the appropiate and special technical design

KEROX ON-SITE TECHNICAL SUPPORT

MAXIMIZING AESTHETICS AND PRODUCTIVITY

KEROX DENTAL TECHNICIANS AND 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

- 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 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 lifetime 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.

KEROX DENTAL

POLYDENT, S.L.
MATERIAL DENTAL

CERAMICS IS WHAT WE KNOW AND DO THE BEST!

Kerox is not your average zirconia company, we have been manufacturing high-tech precision ceramics for over 40 years.

FDA APPROVED

CE Approved

ISO 9001

ISO 13485

DNV ISO 14001

Google Play

Kerox Dental Application

App Store

Kerox Dental Application

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