republicZr®

Cosmetic Dentistry Ceramics

For the new generation of digital labs

dent® republic

Founded for the New Generation of Digital Laboratories.

We develop the substance that people's crowns are made of.

Zirconia is deeply rooted in the DNA of **dent**republic® – our passion is dedicated to this unique substance. With over 20 years of experience in development and production, we've put together the ***cosmetic dentistry ceramics*** portfolio for you.

With our **republicZr Y-ML** discs, we're bringing a heartfelt vision to life. Our goal is to offer the best zirconia for fully digital and fully monolithic esthetics.

Each development and production project in the past has provided valuable insights. We've learned what works – and what doesn't. This know-how has flowed into our products and forms the foundation of clinical safety. To make it as easy as possible for you to create the ideal monolithic crowns and bridges, we've rethought and purposefully advanced esthetic concepts.

These are people's crowns – with **dent**republic®.

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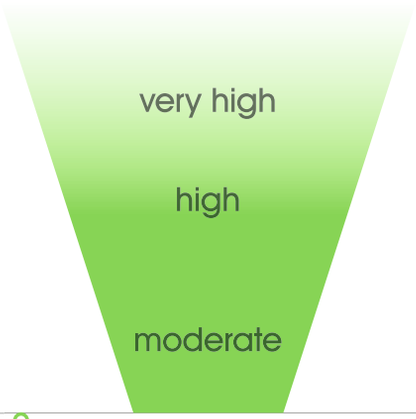
republicZr®
Cosmetic Dentistry Ceramics

Translucency (TP) 	**Y-ML PIONEER** 4Y-PSZ & 5Y-PSZ Gradient in shade, translucency (TP), and strength All Area Prisma Translucency
	high - very high
	5Y incisal zone (disc portion: 23-20%)*
	5Y~4Y Body (disc portion: 58 -60%)*
	4Y cervical (disc portion: 19 – 20%)*
CONCEPT	MULTI LAYERED • 6 main layers + 5 transition layers • ZrO_2 + HfO_2 + Y_2O_3 =>99% • mca – multi coloring agents • UPD - Uniform Particle Dispersion
Indication up to 14 units	Monolithic use in anterior and posterior regions Cut-back technique (minimal veneering)
type/class	ISO 6872 Type II, Class 5 – suitable for all dental restora ti Medical device of risk class IIa according to Article 51
INDICATION – **Veneer**	●●●●●●
INDICATION – **Inlay/Onlay**	●●●●●●
INDICATION – **monolithic anterior**	●●●●●●
INDICATION – **Posterior bridge >4 units (cantilever)**	●●●●●○ (increased dimensions recommended for cantilever bridges)
INDICATION – **Hybrid- Abutment**	●○○○○○
INDICATION – **bar**	○○○○○○
Mechanical stability (ISO 6872)	Flexural strength [MPa]**: **850** (incisal) **1.200** (cervical)
	Fracture toughness [MPa√m]**: **5,47** (KIc)
CTE (25-500°C)	~10,7 (10^{-6} K^{-1})
Sintering temperature	(1.480°C) - 1.500°C
geometries	Ø98 x 16 | 20 | 25 mm
shades	

* The percentage distribution of the layers is optimized for the blank height. For ideal positioning, the relative height of the incisal layer is reduced at the 25 mm height.

** Flexural strength tests are performed according to DIN EN ISO 6872 using the three-point or biaxial method. The determination of fracture toughness (KIc) is a recommendation from the standard. Values are published using the CNB method. SEVNB values are available upon request.

	Y-ML UNLIMITED 3Y-TZP & 4Y-PSZ Gradient in shade, translucency (TP), and strength Molar translucent ceramics	**CLASSIC** 3Y TZP White | Monochrome Frameworks for ceramic veneering
	moderate→high	moderate
	4Y incisal zone (disc portion: 23%)	
	3Y~4Y Body (disc portion: 54%)	
	3Y cervical (disc portion: 23%)	**3Y (disc portion:100%)**
	MULTI LAYERED • 5 main layers + 4 transition layers • ZrO_2 + HfO_2 + Y_2O_3 =>99% • mca – multi coloring agents	**MONO CHROME** • ZrO_2 + HfO_2 + Y_2O_3 =>99% • Pr_2O_3 - Color stabilizer (warm, natural) • mca – multi coloring agents
	Monolithic use in posterior region Full veneering and cut-back technique	Reduced veneering frameworks Hybrid abutments (excellent masking properties)

a tions, including bridges with up to 14 units, with a maximum of 2 adjacent pontics.
51 of Regulation (EU) 2017/745 on medical devices (MDR).

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	●●●○○○		○○○○○○	
	●●○○○○		○○○○○○	
	●●●●●●		●●●●●●	(when veneered or cut back)
	●●○○○○		●●●●●●	
	○○○○○○		●●●●●●	
	Flexural strength [MPa]**	**1.027** (incisal) **1.300** (cervical)	Flexural strength [MPa]**	**1.300**
	Fracture toughness [MPa√m]**	**5,1** (KIc)	Fracture toughness [MPa√m]**	**5,95** (KIc)
	~10,7 (10^{-6} K^{-1})		~10,7 (10^{-6} K^{-1})	
	(1.480°C)-1.500°C		1.530°C	
	Ø98 x 16 | 20 | 25 mm		Ø98 x 14 | 18 | 20 | 25 mm	

Despite digitalization, what goes into the mouth is still *analog.*

With just three (!) **republicZr** types, you can cover all indications and techniques, delight your patients, and turn your CNC department into a profit center.

We've placed special focus on our **republicZr Y-ML** discs, perfecting a proven material even further. They meet the highest standards in esthetics and function – offering ideal properties for fully anatomical restorations.

Shade

For effortless full-anatomic restorations, shade accuracy must be perfect already during the sintering process.

That's exactly why we developed MCA (Multi Coloring Agents) – a coloring technology that ensures the zirconia shade fits ideally after sintering.

Layers

Our **republicZr Y-ML** discs ensure precise reproducibility of shade layers. Up to six main layers are chemically optimized in relation to each other – enabling a homogeneous, seamless diffusion across the transition layers.

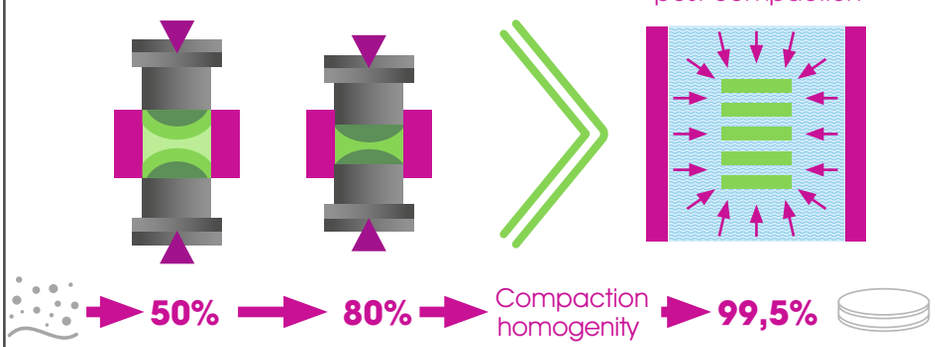
This photo was taken by our first beta tester – just a phone snapshot. No editing, no effects.

You can be sure that the desired shade gradient – according to your CAD/CAM nesting – will be achieved after sintering.

MANUFACTURING EXCELLENCE

1. Gentle axial pre-pressing

2. Extreme isostatic post-compaction



From Powder to Disc

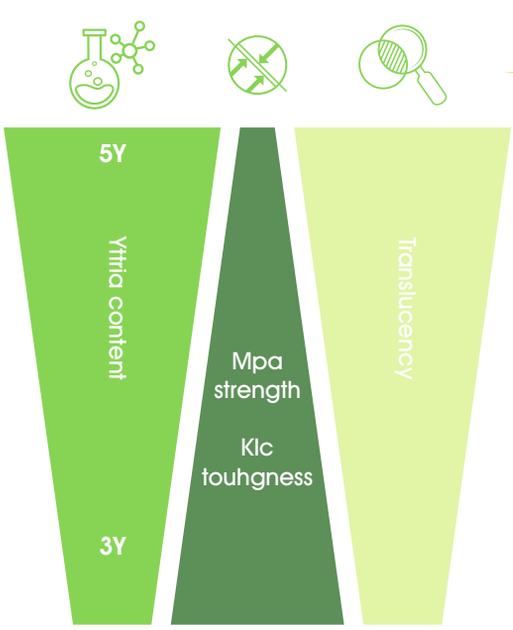
Some manufacturers are still trying to take the cheapest route. But there are proven standards that lead to homogeneous, dense, and defect-free zirconia discs.

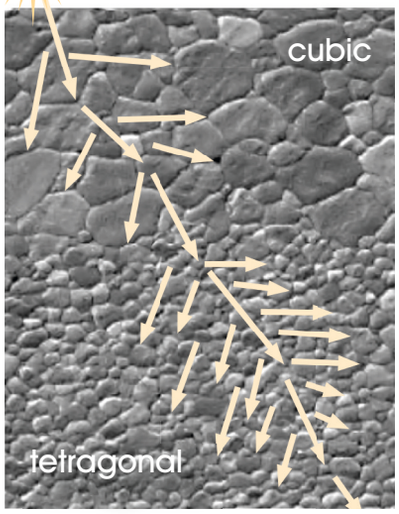
We make no compromises in production. Every disc undergoes a two-step compaction process. A high level of automation ensures process reliability and control throughout manufacturing.

The „pioneer“ Powder Technology

To realize the vision of perfect monolithic zirconia for you, our development started right at the zirconia powder itself. The final quality of a disc is determined approximately 40% by pressing and pre-sintering – and 60% by the raw material. That’s why, for**Y-ML pioneer**, we don’t rely on off-the-shelf concepts, but instead on our own custom-tailored solution.

- **Unique material and process integration within the zirconia industry**
- **Powder and disc production under one roof**
- **The simplest monolithic zirconia – engineered to masterpiece level**
- **All discs suitable for 14-unit bridges**





Hybrid microstructure within the ceramic. An ideal balance of cubic and tetragonal crystal phases.

Multi-yttrium (Y_2O_3) discs have the potential to replicate the natural translucency gradient of a tooth. The high yttrium content in the incisal layer stabilizes large cubic crystallites, which reduce light scattering and thereby increase translucency. Toward the cervical area, the yttrium content is reduced, and smaller tetragonal crystals become dominant within the microstructure.

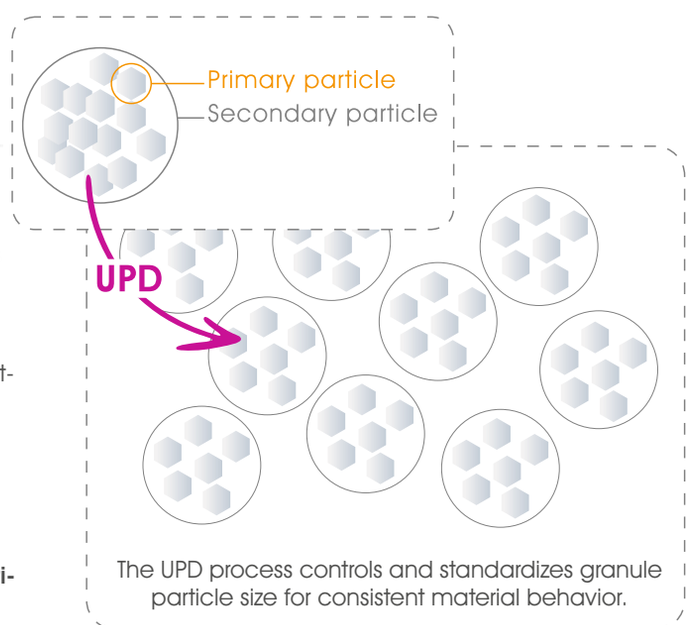
As a result, light transmission decreases – improving the masking of discolored, non-vital, or metal abutments. At the same time, flexural strength (MPa) and fracture toughness (Klc) increase.

Our zirconia development relies on innovative Uniform **Particle Dispersion (UPD)** technology to ensure outstanding material properties. This allows for flexible combination of **3Y-TZP powders** – known for their excellent mechanical strength – and **5Y-PSZ powders**, offering maximum translucency.

The result: smooth translucency gradients and a targeted adjustment of strength exactly where it’s needed.

Another key advantage: the raw materials exhibit **consistent sintering activity**. This prevents fit deviations after sintering and reduces internal stress in the restoration.

The outcome: **enhanced mechanical performance and an optimal fit** – for long-lasting, esthetic restorations.



The UPD process controls and standardizes granule particle size for consistent material behavior.

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Is our "why" also your "why"?

A strong and shared "why" is the starting point for inspiration and motivation. That's why, at **dent**republic®, we first defined why we do what we do – before diving into the development of new products, processes, and services:

Our goal is the perfect ceramic crown for everyone – regardless of financial limitations.

To achieve this, we think differently – and offer you what the industry doesn't want to talk about: authentic market prices. Our products are sustainable and valuable – but our prices reflect their true worth, without unnecessary markups.

Founded for the new generation of digital laboratories.

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