

the ONE zirconia



DDcubeONE[®]

high strength – cubic zirconia system

WHITE



MULTI
LAYER



„IT SEEMS
IMPOSSIBLE
UNTIL
SOMEBODY
IS DOING IT“

DDcubeONE®

high strength – cubic zirconia system



Perfect balance of high resistance and high translucency



Through a newly developed material composition (4Y-TZP) and optimized manufacturing processes, a hybrid micro-structure is set in the ceramic. The crystal structure of DD cube ONE® has a perfect ratio between cubic and tetragonal zirconium oxide particles.

The defined amount and controlled size of the cubic crystals reduce the refraction index and increase the translucency. The dominant, smaller, tetragonal crystals increase the stability.

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High Translucent Plus

(1 mm thick)

45%



Type and Indication

(acc. to ISO 6872)

type II, class 5



≥ 4 units

Strength

> 1.250 MPa

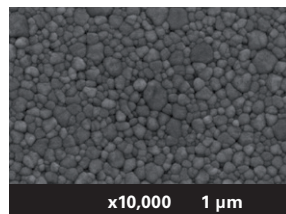
Cubic crystals

~ 30%

Tetragonal crystals

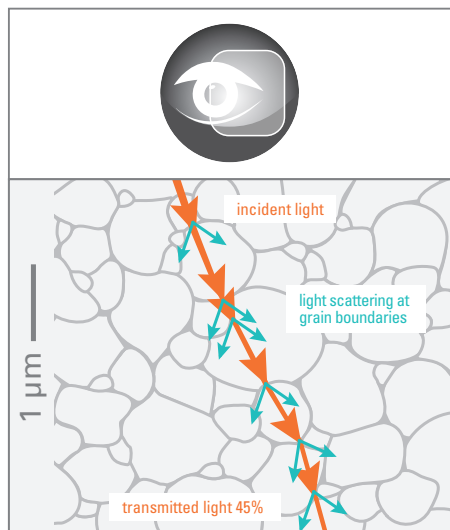
~ 70%

SEM picture of
crystal structure



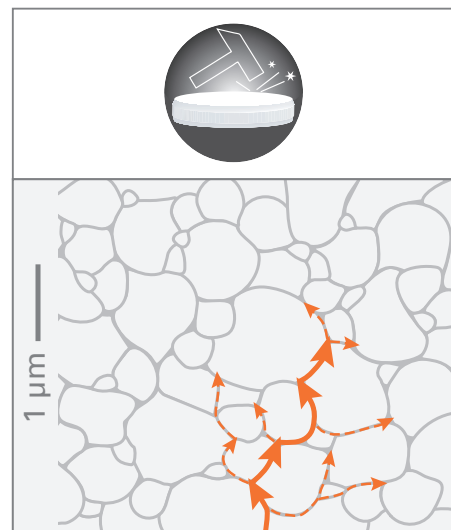
Fracture toughness

10 MPa√m



Translucency

The integrated large cubic crystals reduce the light refraction index at the grain boundaries and increase translucency.



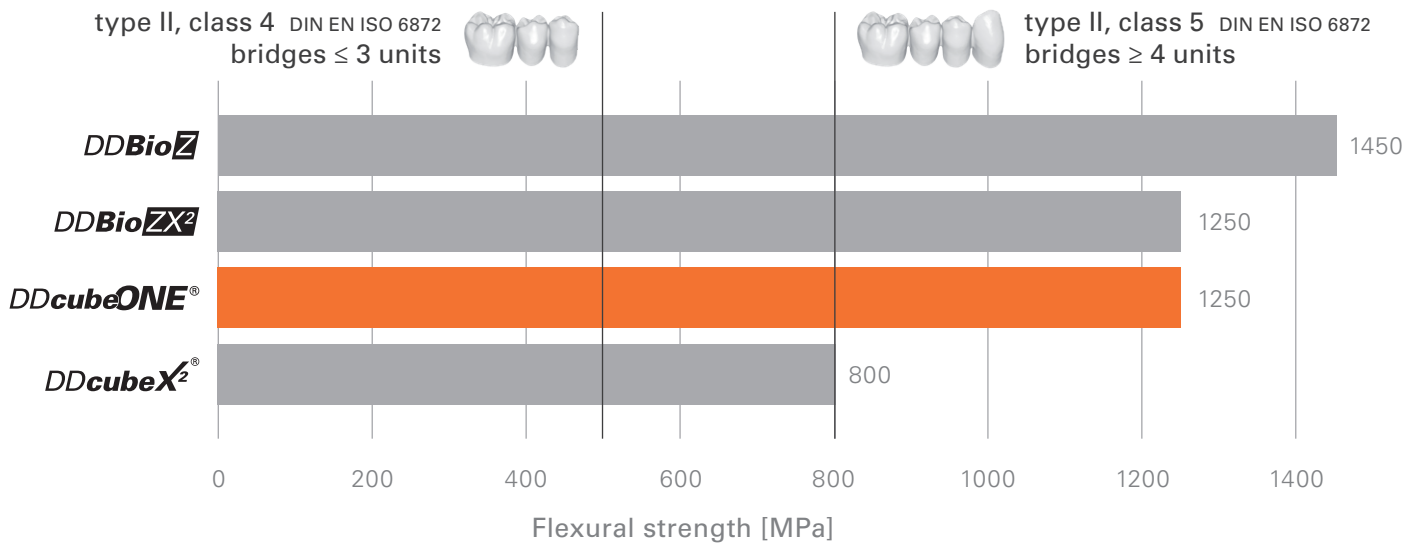
Resistance

The predominantly tetragonal crystal structure increases the stability. Microcracks are deflected and weakened in the fine structure.

Sources: Accredited test laboratory. Mechanical Properties measured in accordance with DIN EN ISO 6872. R&D Dental Direkt. Translucency measured by means of a spectrophotometer on 1 mm thick, polished samples.

Its core competence – multi-indicative strength

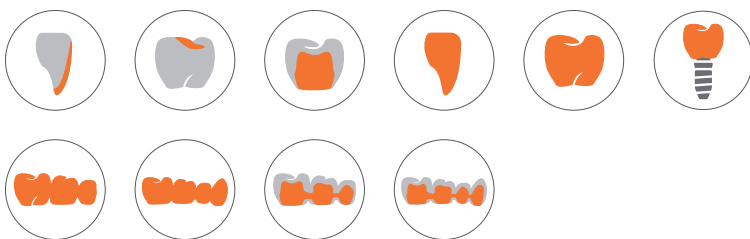
The flexural strength indicates how much force is required to break a test sample of a defined diameter. High MPa value is essential for stress-bearing restorations and determines the indications for use. The more strength a material offers, the more units a restoration can include. DD cube ONE® is perfectly suitable for multi unit bridges.



Source: Accredited test laboratory. Flexural strength measured on precolored zirconia samples in accordance with DIN EN ISO 6872 in the 3 point approach.

Indications

DD cube ONE® is well suited for minimally invasive treatment options with thin wall thicknesses and offers aesthetic solutions from single tooth to long-span restorations up to 14 units.

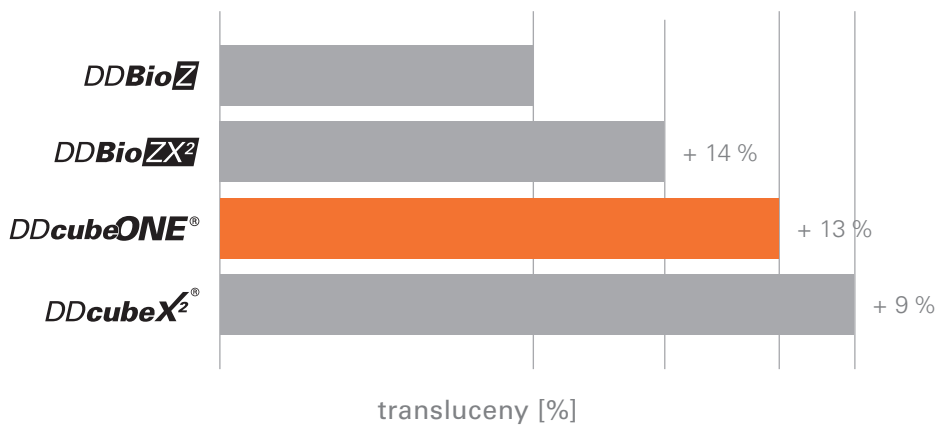


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Its natural character – multi-indicative translucency

The defined amount and controlled size of the cubic crystals in the microstructure reduces the refraction index and increases the translucency.



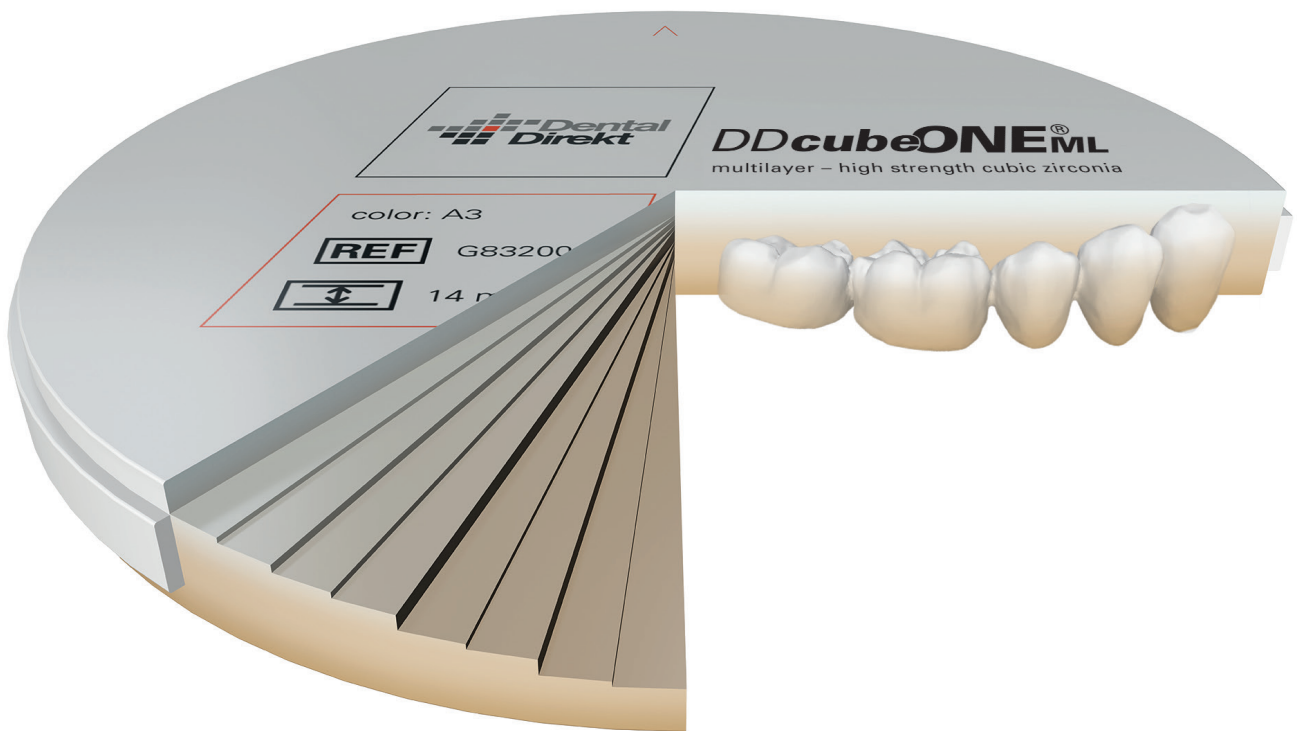
Source: R&D Dental Direkt. Translucency measured by means of a spectrophotometer on 1 mm thick, polished samples.



With DD cube ONE® you can realize a wide variety of aesthetic solutions. With the polychromatic „ML“ the light transmittance in the incisal area is on a high level. At the same time it is blocked in the dentine region. This gives you flexibility to make beautiful full contour prosthetics and more.



Unique results due to multilayer concept

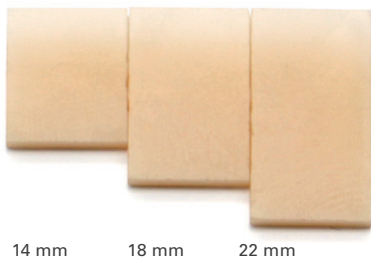


The 5 main layers are optimized in terms of chemistry and grain size to one another.
This ensures a homogeneous and continuous diffusing in the 4 transition layers.

DDcubeONE[®] ML

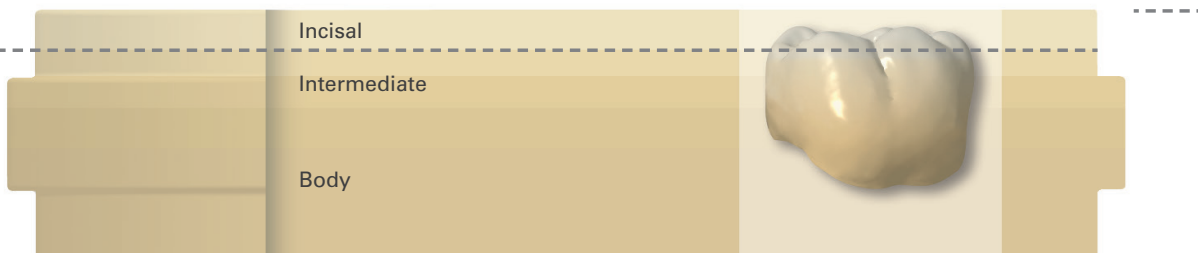
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Color with concept



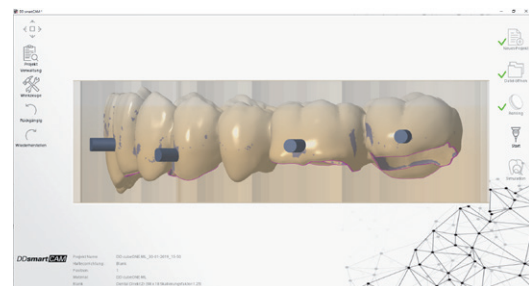
Fix enamel layer

Every blank has a 3.5 mm enamel layer. The intermediate layers are also aligned with all blank heights. Only the thickness of the body zone increases. A concept designed for a flexible variation of color intensity and to prevent a too strong brightening of the dentine color.



Precise reproducibility of the layers

Our unique production processes ensure a precise reproducibility of the color layers. As a result you can be assured that the desired color gradient as nested in CAD/CAM is achieved after milling and sintering. A clear visual distinction of layers like in DD smart CAM make it easy to define the nesting position in the blank.



Thermal Expansion Coefficient

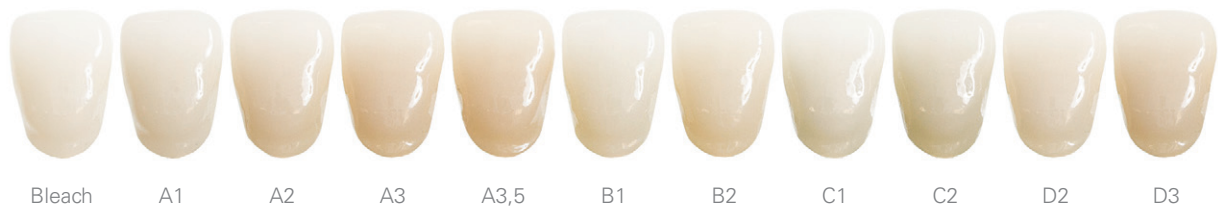
Our sophisticated Multilayer-concept assures an uniform thermal expansion coefficient through all color layers. Therefore DD cube ONE[®] ML is approved for any kind of veneering, considering the usual manufacturers recommendations.

CTE [$10^{-6} K^{-1}$]
10,5 (+/-0,3)



Natural color that deserves the attribute natural

Each color according VITA® we offer, has its unique color system in the layers from cervical to incisal which is adjusted to the dentine shade. During the sintering process, the boundaries soften in a diffusion process of color additives. The result is natural aesthetics with smooth transition of color.



Natural translucency with the perfect progression

By means of the increasing intensity of color from incisal to cervical, the material translucency is also reduced in a controlled way. This facilitates already attractive aesthetics after simple glazing. Highly aesthetics can be achieved with DD contrast® – color and form concept stains and structure pastes.



DDcubeONE[®] ML

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Perfect Translucency – less greying and better masking

DD cube ONE[®] provides the best care especially for tooth stumps that are not the same color and for abutment crowns. The higher translucency in the incisal area ensures natural aesthetics. In the body area, the increasing color intensity creates the perfect balance between the natural vitality of the tooth and the covering of the stump color.



1. Desired tooth shade: A2 (VITA[®])
Shade of tooth stump: approx. A3,5

2. DD cubeONE[®]
match ✓

3. DD cubeX2[®]
Greying – adaption of stump shade

Due to the flow of light, super translucent ceramics such as DD cubeX2[®] are ideal for anterior restorations, if the tooth stump color enables an appreciated color or if the desired color can be achieved in combination with a colored dental cement.

With DD cube ONE[®] you will reach the color,
regardless of the environmental conditions

Unique robustness due to break protection factor



DD cube ONE® defines a class of its own.

It is the high robustness in terms of excellent fracture toughness and aging resistance thanks to phase transformation toughening what we describe as the break protection factor.

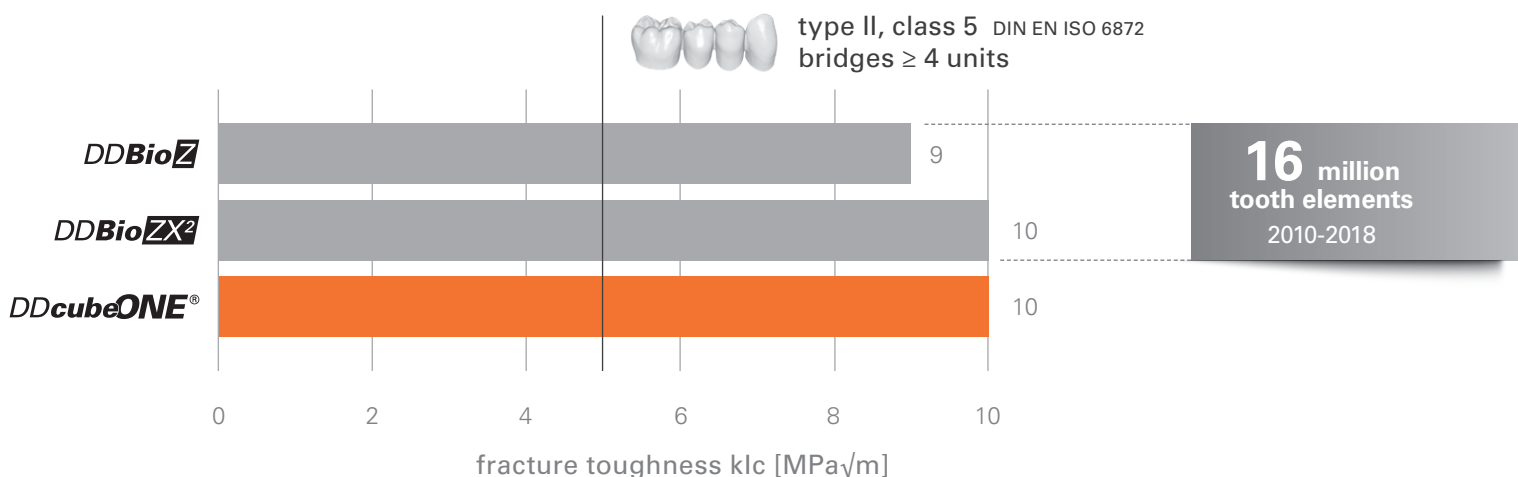
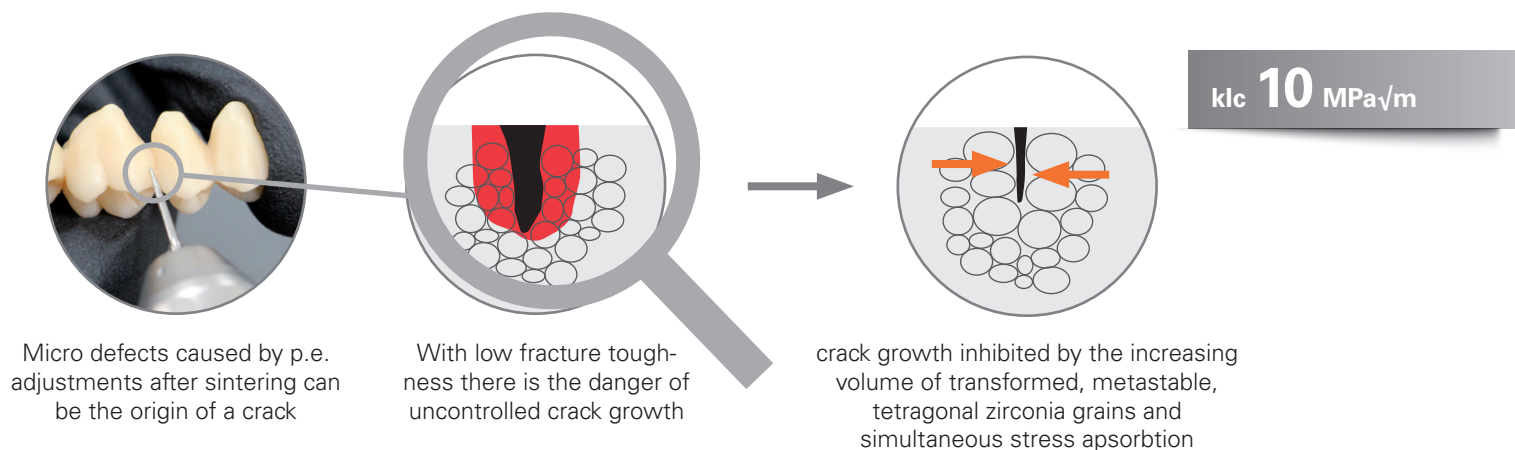
These properties make it unique in the group of cubic zirconia.

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Highest fracture toughness – proven by 16 million tooth elements

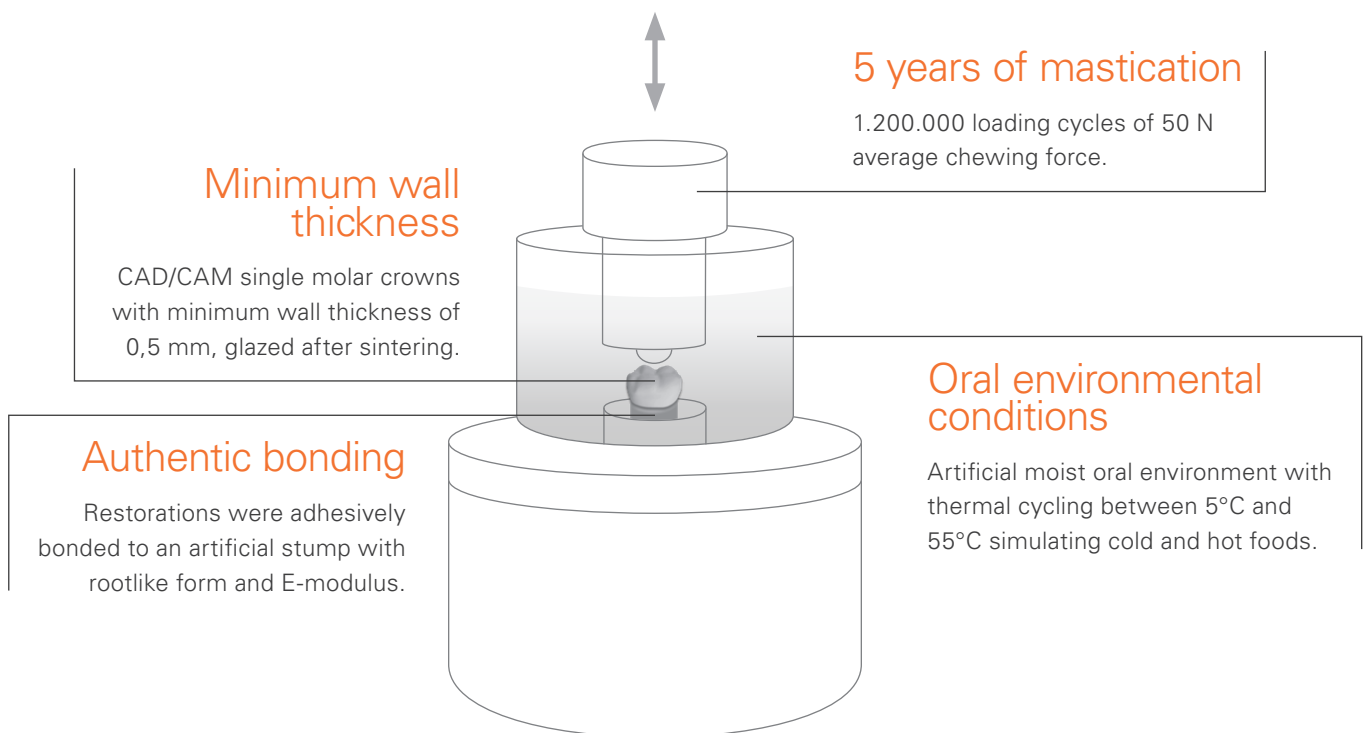
A high fracture toughness is achieved due to the resistance to crack propagation. The higher the value, the better the long-term clinical behavior. The ideal combination of great strength and high fracture toughness is based on the materials ability to transform its crystalline phase in such a way that it stops the progress of a crack in the ceramic and closes it again. The ability of DD cube ONE® for phase transformation toughening is unique for a high translucent cubic zirconia.



Source: Accredited test laboratory. Test method SEVNB according to DIN EN ISO 6872.

Since 2010, more than 16 million tooth elements have been manufactured from our established, high strength 3Y-TZP zirconia types DD Bio Z and DD Bio ZX². The high fracture toughness is the key to their robustness. By means of the documented, clinical success with these types, our developers have established a fracture toughness of $klc > 9 \text{ MPa}\sqrt{\text{m}}$ for the break protection factor.

Offers what would be great for the entire body – reliable aging resistance



This test setup simulates the mechanical and thermal stresses which dentures are exposed to in the patients mouth over a supposed wearing time of 5 years.

Chewing simulation

In comparison to standard conform tests, the chewing simulation has a much more practical orientation. It permits a statement on the long-term-performance of a material in its clinical application.

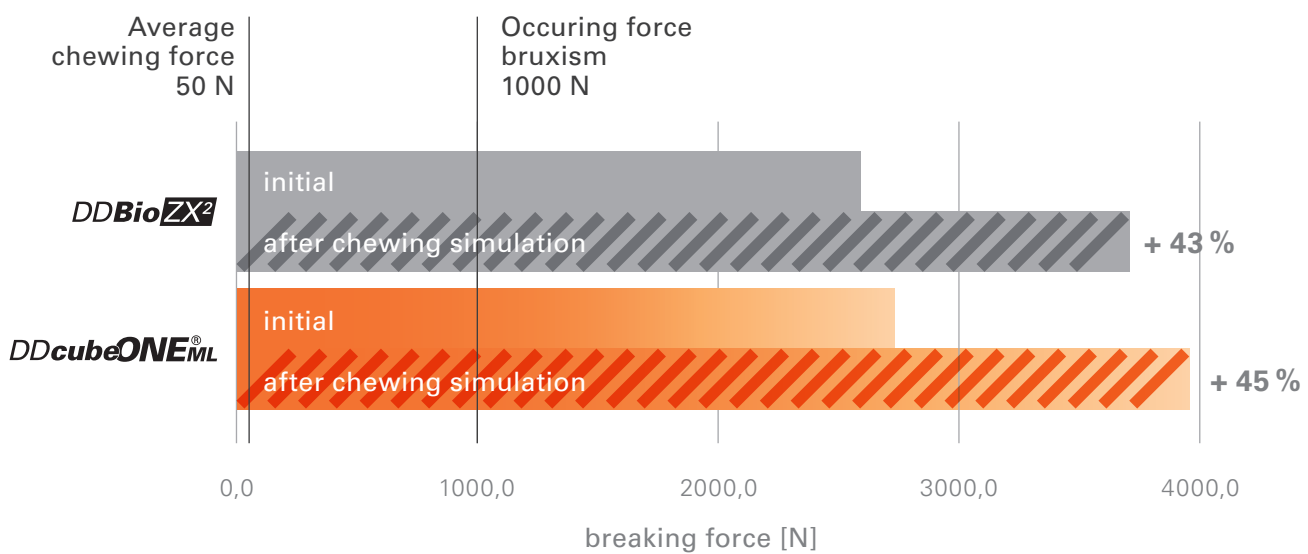
Due to the artificial oral environment including moisture as well as mechanical and thermal stresses the crowns undergo an aging process.

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Increase of solidity

After 5 years of simulated wearing time.

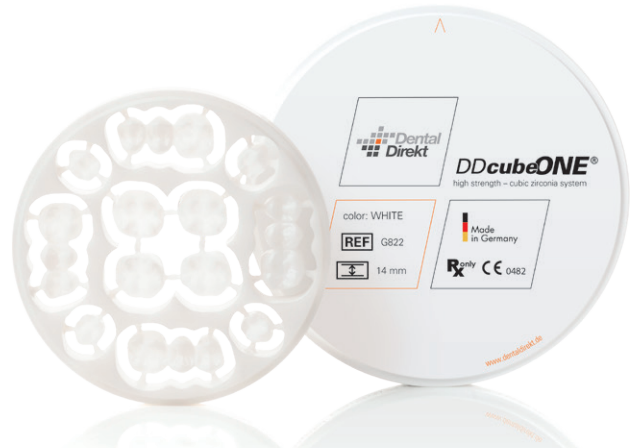
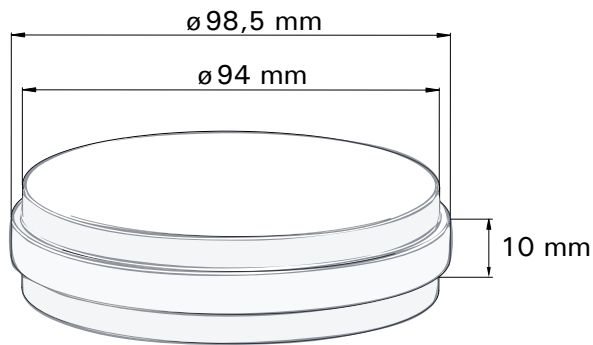


Source: University Hospital Regensburg, Department of Prosthetic Dentistry, Prof. M. Rosentritt. Extract from the report 'In-vitro examination of standardized molar crowns'.

True quality shows in daily use over a long period of time. Therefore dentures made of DD cube ONE® undergo steady stress tests, that are even harder than the reality. The results? Outstanding, sustainable and similar to classical zirconia, with an increase of solidity. That establishes safety for professionals and patients equally.

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Measure	Order-no.	Recommended DD coloring liquids
98,5 x 10 mm	G820	DDBasicShade DDProShadeZ DDArtElements
98,5 x 14 mm	G822	
98,5 x 18 mm	G824	
98,5 x 20 mm	G825	
98,5 x 25 mm	G826	

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multilayer – high strength cubic zirconia



Measure	Bleach	A1	A2	A3	A3,5
98,5 x 14 mm	G832017	G832007	G832001	G832002	G832003
98,5 x 18 mm	G834017	G834007	G834001	G834002	G834003
98,5 x 22 mm	G836017	G836007	G836001	G836002	G836003



Measure	B1	B2	C1	C2	D2	D3
98,5 x 14 mm	G832008	G832004	G832012	G832005	G832015	G832006
98,5 x 18 mm	G834008	G834004	G834012	G834005	G834015	G834006
98,5 x 22 mm	G836008	G836004	G836012	G836005	G836015	G836006

Consult instructions for use
Not all products are available in every country.

Pre-colored blanks are not allowed to be used with patented coloring technologies
Names marked with © are registered trademarks of the manufacturers.



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