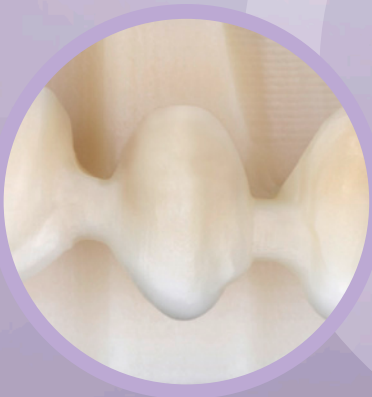


dima®

Handling information



**dima® Mill Zirconia ML (Multilayer)**  
Handling information

Giving a hand to oral health.



**KULZER**  
MITSUI CHEMICALS GROUP

## Processing instruction

### dima Mill Zirconia Multilayer (ML)

Framework material dima Mill Zirconia ML Shades A light, A dark, B light, B dark and C light.

#### Chemical properties

$ZrO_2 + HfO_2 + Y_2O_3 > 99\%$

#### Technical data (typical measured values)

Density:	> 6.0 g/cm <sup>3</sup>
E-Module:	205 GPa
Fracture toughness:	8 MPa $\sqrt{m}$
Coefficient of thermal expansion (25–500°C):	10.7 $\mu m/mK$
Hardness:	13 GPa
Flexural strength:	>1200 MPa

The dima Mill Zirconium Dioxide range now has a new variety of shades. The multichrome and high-translucency multilayer material has four smoothly transitioned shade layers. The dima Mill Zirconia ML material is available in 5 shade nuances (Shades A light, A dark, B light, B dark and C light), which offers a natural colour transition.

### Software setting options ZrO<sub>2</sub> ML Shades A light, A dark, B light, B dark and C light

For the parameters for the settings of the framework material (determined on the basis of the cara Mill milling machine) please see the **cara Mill setting parameters** document for 3shape Dental Designer or cara CAD.

#### Indications:

Always make sure to observe the [general guidelines for all-ceramic preparations!](#)

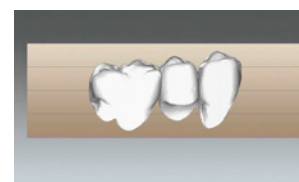
- Crowns and bridges with up to 16 units and a maximum of 2 adjacent pontics.
- Inlays/Onlays/Veneers

#### Design guidelines:

- The dima Mill Zirconia ML material, with its flowing shade transitions and the natural colour gradient, is suitable for monolithic and partially anatomically reduced frameworks and restorations.
- Frameworks should be designed like a smaller version of the tooth to observe the maximum veneer thickness of 2 mm for the veneering ceramic.
- The ideal dimensioning of the wall and connector thicknesses prevents bending forces exerted on the framework or crown wall, as bending of the framework or crown would invariably result in a failure of the veneer/framework ceramics.

## Positioning the frameworks in the CAM Software:

The vertical height position must be noted for the correct shade nuance in dima Mill Zirconia ML-Disc. Most CAM software applications support vertical positioning through color differentiation. So also with the cara Mill CAM 4 (v4.6 + higher) and cara Mill CAM 5 (v2018). This simplifies positioning of the multilayer discs by the customer. This distinguishes multichrome Material from monochrome dima Mill Zirconia Material-Discs. Other CAM software applications might not display the visualization, so please note the Position row in the table below for the corresponding position for the shading.



(A2, for example: Here please position the frame in a dima Mill Zirconia ML A light disc in the bottom area.

## dima Mill Zirconia ML range of shades: A light, A dark, B light, B dark and C light

The flowing shade transitions and the four-layer structure of the multilayer zirconia enables direct application of V-Shades A1–A2 (A light), A3–A3.5 (A dark), B1–B2 (B light), B3–B4 (B dark) and C1–C2 (C light). The details of the position (top or bottom) depend on the height of the framework and the chosen disc height, because higher frameworks may restrict the positioning. The following shade arrangement is applicable for HeraCeram Stains and Glaze universal for veneering and shading technique for crowns and bridges with up to 16 pontics:

V-Shade	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4
dima Mill Zirconia ML	A light	A light	A dark	A dark	A dark	B light	B light	B dark	B dark	C light	C light	C light	C light	C light	C light	C light
Position	top	bottom	top	bottom	bottom	top	bottom	top	bottom	top	bottom	bottom	bottom	bottom	bottom	bottom
Body	BS-C	–	–	BS-C	2xBS-C	–	–	BS-B	–	–	–	–	–	BS-C	BS-C	olive/corn 1:3
Enamel	–	EN Opal	EN Opal	EN Opal	EN Opal	Smoke	Smoke	–	EN Opal	olive	olive	–	–	–	–	–

Depending on the height of the discs, the color intensity of the same crown can vary. The table gives a color orientation for the positioning and recommendation for stains – depending on the height of the disc and framework.

### Important information for the final shading:

dima Mill Zirconia ML can be used for the manufacture of monolithic frameworks with the complete V-range of shades partly with direct vertical positioning and partly by customisation with shades for characterisation.

Particularly for shades A4, C3, C4 and D2–D4 the recommendations for height positioning and the number of glaze firings should be noted.

The information in the overview in the shade table is solely a recommendation, which does not need to be followed.

Zirconia materials tend to fade at higher firing temperatures. Because the multilayer material is particularly characterised by a gradient with direct shading, it is recommended that low melting point ceramics be used for the veneer and the glazing. In the glazing, the dima Mill Zirconia ML material should be used for personalisation at a max. of 800°C using Universal Stains Glaze. The holding time can be 2 min. to obtain the high level of gloss.

## Ceramic veneer:

Please observe the Instructions for Use of the ceramic preferred by you which is suitable for Zirconium Dioxide frameworks.

### Preparation of the frameworks for staining monolithic zirconium dioxide crowns:

- Zirconium dioxide frameworks do not generally need blasting.
- If necessary, impurities due to grinding residues can be blasted off with  $Al_2O_3/50\mu m$  and low pressure (max. 2 bar).
- No adhesive required.
- For more details and firing tables, please refer to the brochure translucent zirconium dioxide for monolithic restorations.
- After grinding, always polish the regions that have been ground so they have a high gloss finish!

### Recommendation for veneering with HeraCeram Zirkonie 750:

- Clean zirconium dioxide framework with a steam cleaner.
- Apply Zr adhesive directly to the surface of the framework.
- Refer to the HeraCeram Zirkonie 750 instructions for use for more details and firing tables.
- Low-melting-point zirconia veneering compounds (for  $ZrO_2$ ) are recommended to ensure no shade changes at high temperatures due to the limited colour stability.



### Impressive aesthetics with staining technique:

- HeraCeram Stains and Glaze universal are stains and glaze in paste or powder form for all ceramic lines from Kulzer that cover all indications for ceramic stains.

## Cementing Guidelines for dima full-ceramic

### Adhesive or conventional cementing – a decision aid for practices

From an aesthetic point, full-ceramic restorations have many advantages and with their excellent translucency, they integrate harmoniously with the remaining teeth. Restorations made of dima Mill Zirconium Dioxide can be cemented adhesively or conventionally. Under certain clinical conditions however, adhesive cementing is preferred.

#### ■ Adhesive Cementing

Adhesive cementing is recommended for primary telescopes, inlays/onlays/veneers and crowns and bridges on very conical and/or short stump geometries.

#### ■ Conventional Cementing

We recommend standard phosphate cements from Kulzer for conventional cementing.

For more information about dima and other Kulzer products, have a look at our website [kulzer.com/dima](http://kulzer.com/dima)



### The general safety regulations for handling dental products are applicable.

In compliance with the European Directive 93/42/EEC, our medical devices carry a CE mark or "custom design" depending on their classification.

### Contact in Germany

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