

# structure

*new dimension*



estetic ceram



# structure

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# structure

## Introduction

Even the latest zirconia restorations from multi-layer zirconia blanks suffer from numerous aesthetic deficiencies. Multilayer zirconia offer horizontal grading in colour from cervical to incisal and sometimes additional translucency grading only. Vertical structures and lifelike fluorescence are missing entirely.

In order to overcome these deficiencies and to create high aesthetical restorations, individual characterisation by coloration and layering become necessary.

esthetic ceram offers ready to use structure **LFU stains & shades** and **structure** pastes to meet these challenges in the creation of high quality full contour zirconia restorations.

The principal work flow doesn't change significantly. The zirconia related CAD/CAM process creates full-contour restorations with colour and translucency grading and with a minimum 0.2 - 0.3 mm cut back.

With **LFU structure stains & shade** pastes any colour variation of natural teeth can be imitated. **structure** imitates all individual characteristics of the body, incisal or gingiva proportion of the tooth. Special attention was paid to natural translucency, opalescence and fluorescence.

With **LFU structure shades & stains** the characteristic colour on the surface of the monolithic frame is achieved which enhances the individuality of the cervical area or imitates vertical structures of the body.

Even a complete colour shift of up to three V-shades (lighter or darker) of the shaded zirconia crown is possible if the colour choice of the zirconia blank was made incorrectly.

The special formulation of the **LFU structure stains & shades** pastes allow precise and stable positioning of the colour. The final colour aspect is already visible during application and even before the firing cycle in wet condition.

**structure** pastes add 3D structures to the monolithic restoration with lifelike translucency, natural fluorescence and opalescence.

Special **structure gingiva** colours allow the creation of gingiva proportions on implant supported crowns and bridgework or whenever missing soft tissue needs to be replaced.

Small shape corrections at contact points or to the occlusal surface are easily to apply with **structure** pastes.

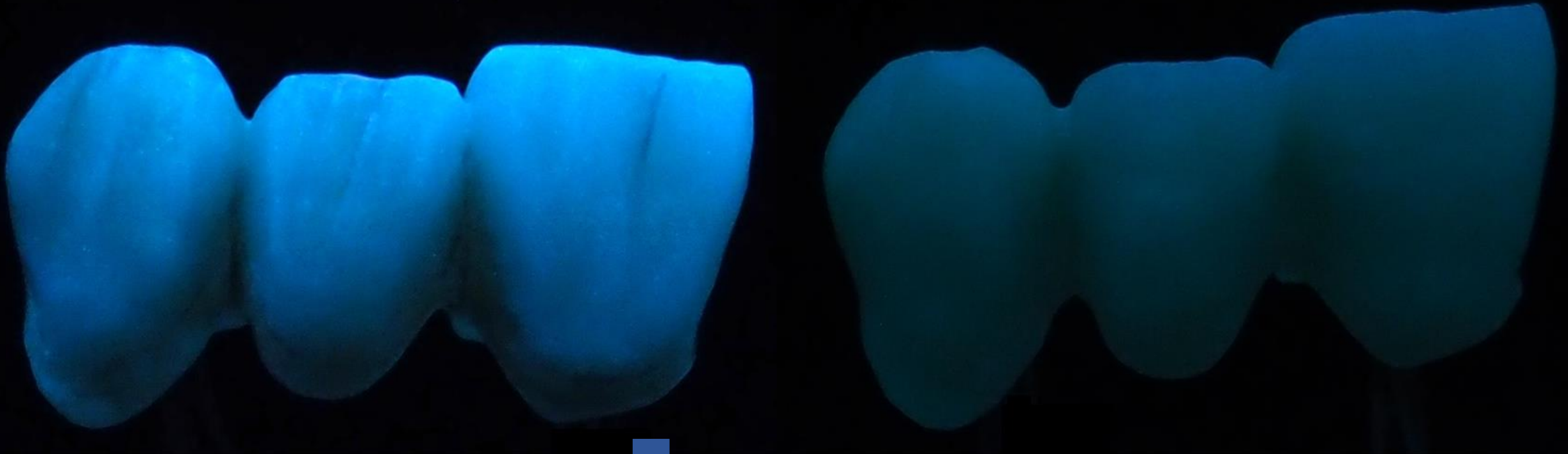
**LFU structure stains & shades** and structure preserve and support the light transmission and light dynamic of the base framework material zirconia and lithium disilicate glass ceramic and unlock new levels of aesthetics to full contour restorations.

**structure** pastes represent a total new state of dental porcelain:

Paste gel was completely new developed. Ready to use dental porcelain in paste allow dental technicians through simple handling perfect application, shaping and surface texturing. The paste consistency and particles size distribution guarantee excellent shaping possibilities and stability during firing process.

The special manufacturing process and extensive quality control measures guarantee a homogeneous and dense surface and all advantages of modern dental porcelain in terms of biological, physical and chemical stability and wear.

# structure «bridge under UV light»



- natural fluorescence
- unique paste consistency
- true colour porcelain application
- lowest shrinkage
- high aesthetic depth at 0.2 mm thickness
- easy shape corrections and application of contacts



# LFU structure shades & stains



# LFU structure shades



shade A light  
fluor.



shade B light  
fluor.



shade C light  
fluor.



shade D light  
fluor.



shade A  
fluor.



shade B  
fluor.



shade C  
fluor.



shade D  
fluor.



Body colours

**Area of application:** Body colours for the characteristic colouring of A - D colours.



# LFU structure stains



# LFU structure stains (fluorescence)



white fluor.



snow white fluor.



transpa 3 fluor.



vanilla fluor.



beige fluor.



yellow fluor.



yellow 2 fluor.



orange fluor.



orange middle fluor.



orange int. fluor.



orange 2 fluor.



champagne fluor.



safari fluor.



safari+ fluor.



olive fluor.



khaki fluor.



khaki int. fluor.



orange / khaki fluor.



copper fluor.



rose fluor.



purple fluor.



smoke fluor.



pigeon blue fluor.



blue fluor.



green fluor.



brown fluor.



dark brown fluor.



dark brown int. fluor.



black fluor.



grey fluor.

## Effect colours

**Area of application:** Effect colours for extensive characteristic colouring.

**Note:** The colours shown are only a selection from our wider range.



# LFU structure stains (without fluorescence)



esthetic ceram



rose



rose pink



blue rose



purple



red purple



red



red bright



coral



ec red



yellow 2



blue



pigeon blue



smoke



tobacco intensive



red brown intensive

## glaze LFU



glaze



glaze fluor.



glaze int. fluor.

### Effect colours

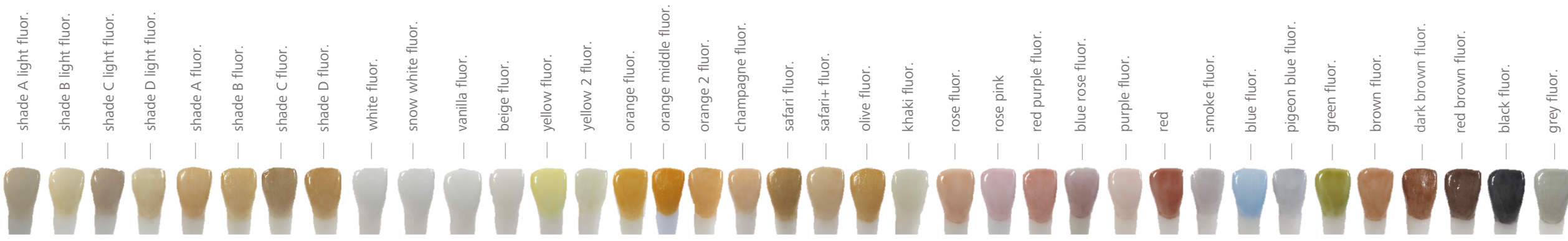
**Area of application:** Effect colours without fluorescence for an extensive characteristic colouring. Also ideally suited for use in the gingival area.

### glaze

**Area of application:** For the perfect gloss finish with glaze without fluorescence, or with fluorescence of different fluorescence strengths.

# LFU structure shades & stains

Burned on Zirconium Oxide



**Note:** The colours shown are only a selection from our wide range.

# structure



# structure

## Colour overview

### dentine



dentine A00



dentine A0



dentine A1



dentine A2



dentine A3



dentine A3,5



dentine A4



dentine B00



dentine B0



dentine B1



dentine B2



dentine B3



dentine B4



dentine C1



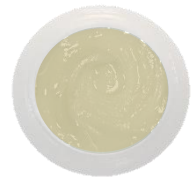
dentine C2



dentine C3



dentine C4



dentine D2



dentine D3



dentine D4



# structure

## Colour overview

### Transpa



white



blue



orange



pink



amber



t-lemon



t-orange

### Smart Mamelon



sunny beach



maple



beechtree



teak



fosse



cuspid

### Base



base 1



base 3



base 5

#### structure intensive transparents

**Area of application:** positioning of individual transparent effects in the incisal area

- transpa

#### structure effects

**Area of application:** positioning of individual characteristics

- smart mamelon
- fosse
- cuspid
- base

# structure

## Colour overview

### flu



flu 2



flu 3



flu 4

### opal



opal

### neutral



n-light



n-medium



n-deep



n-strong

### clear



clear

### incisal



incisal 1



incisal 2



incisal 3



incisal 4

### glaze



glaze fluor.

#### structure fluorescent effects

**Area of application:** mamelon structures

- flu

#### structure neutrals with graded opacity

**Area of application:** for individual features and for brightening of tooth colours

- neutral

#### structure incisals

**Area of application:** incisal area

- incisal 1-4
- opal
- clear

# structure «application»

sintered Zirconium Oxide

nature colour

individual colour



## Instructions

- Mix **LFU structure shade & stains** and **structure** pastes before any usage with metal-free spatula.
- Always use dry brushes or spatula.
- Moisten brush with **structure liquid** before application of pastes.
- Use **structure liquid** only to adjust consistency of **LFU structure shades & stains** pastes and **structure** pastes.
- **Caution:** **LFU structure shade & stains** and **structure** pastes should not get in contact with water.

## Framework preparation

- Preparation of frameworks according to the information of the framework manufacturer.
- Prepare the surface before the application of **LFU structure shades & stains** or **structure** pastes by careful sandblasting with alumina (110 µm, 2 bar pressure).
- Clean the surface by steam.

## Colouration

- Apply a thin layer of **structure liquid** to the surface before application of **LFU structure shades & stains** pastes.
- Colourations (refer to pages 5-10).

## Structuration

- Apply a thin layer of **structure liquid** to the surface before application of **structure** pastes.
- Application of **structure** pastes according their colourations. (refer to pages 16-19).

## Glaze paste application

- After finishing the restoration you can optionally apply the **glaze LFU** paste or the **structure glaze fluor**. thinly and evenly to the entire crown. Degree of shine can be adjusted by polishing tools after glaze firing.

## Firing

- Firing according to firing table (refer to page 29).

# structure «nature colour»

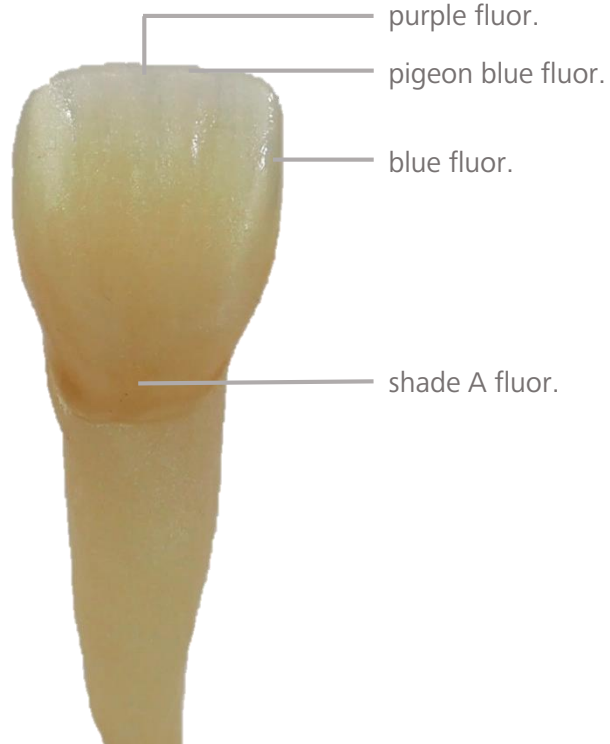
## Application example:

Pointed colour application of **LFU structure shades & stains** and **structure** pastes adjust discolouration and colour effects to the natural teeth.

sintered Zirconium Oxide



LFU structure shades & stains



structure



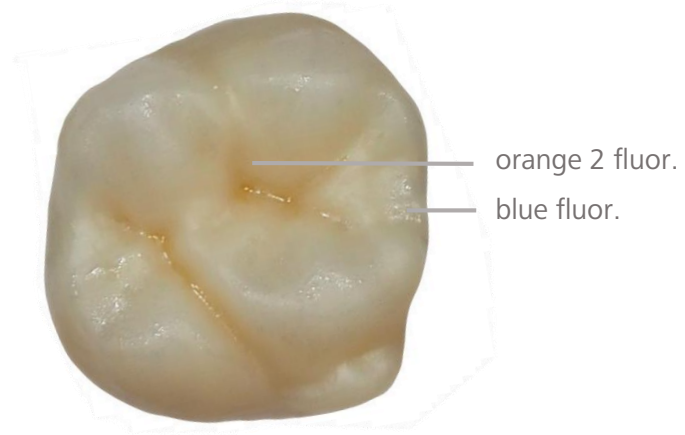
glaze finish





# structure «nature colour»

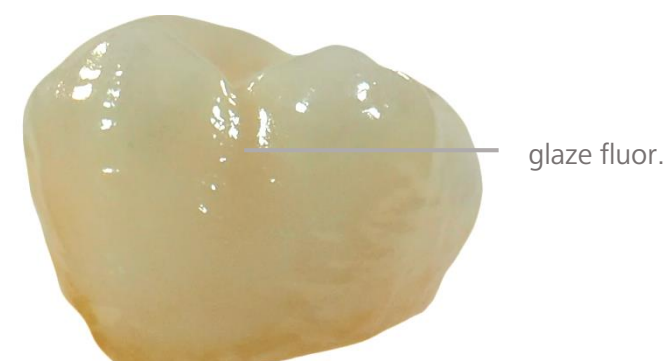
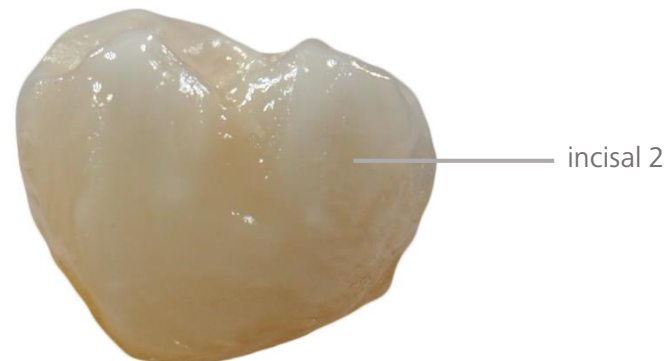
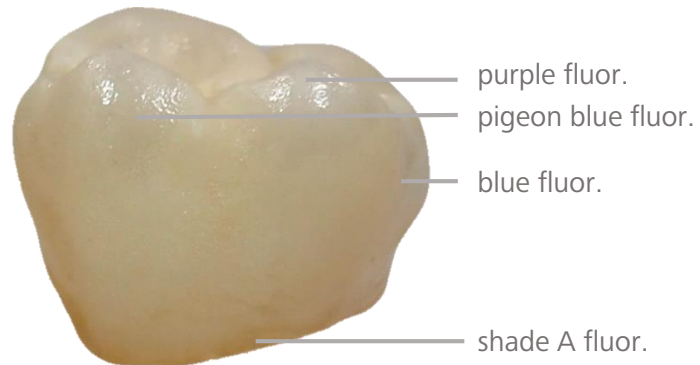
LFU structure shades & stains



structure



glaze finish



# structure «individual colour»

## Application example:

intense colouration with **LFU structure shades & stains** and **structure** pastes adjust also deeply discoloured teeth.

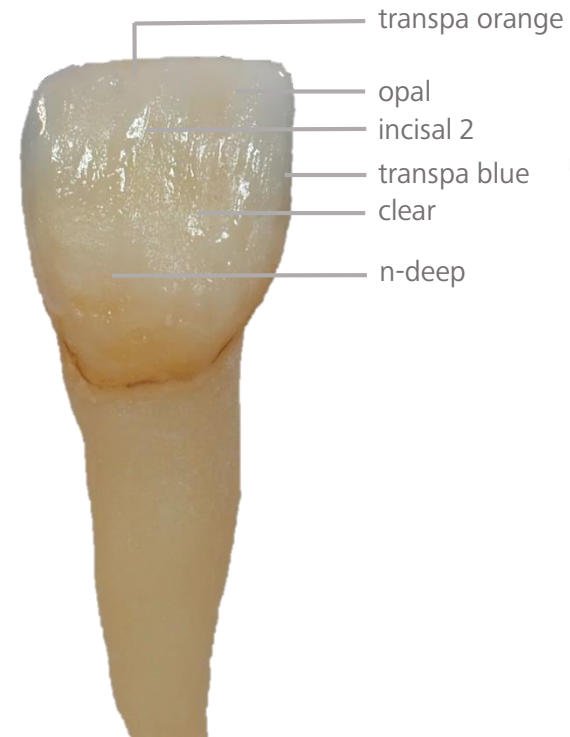
sintered Zirconium Oxide



LFU structure shades & stains LFU



structure

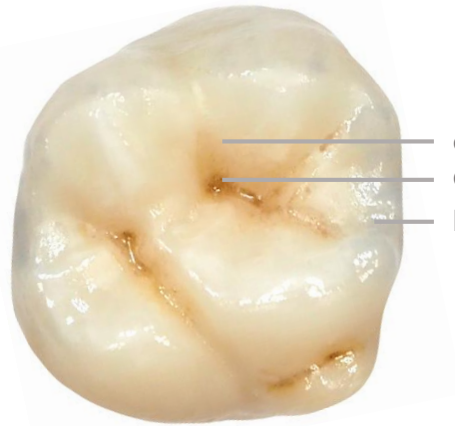


glaze finish



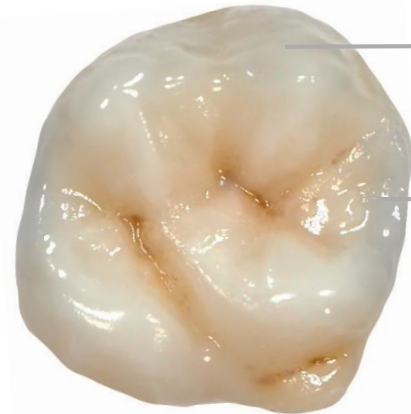
# structure «individual colour»

LFU structure shades & stains



orange 2 fluor.  
dark brown fluor.  
blue fluor.

structure

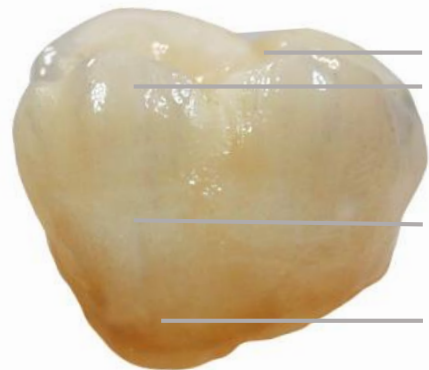


incisal 2  
transpa blue

glaze finish



glaze fluor.



purple fluor.  
pigeon blue fluor.  
white fluor.  
shade A fluor.



opal  
incisal 2  
n-deep  
clear



glaze fluor.

# structure «shade matching»

sintered Zirconium Oxide



stained and structured



VITA classical A1-D4® Shade guide

Through intensified colour application with **LFU structure shades & stains** and **structure** pastes translucency and chroma of crowns and bridges can be perfectly adjusted to the natural teeth.



# structure «colour shift: A2 to A4»



Even a colour shift up to three shades darker is possible with **LFU structure shades & stains** and **structure** pastes in case the blanks colour was selected too light.

# structure «colour shift: A4 to A2»



With LFU structure shades & stains and **structure** pastes (n-light, n-medium, n-deep, n-strong) a colour shift up to three V-shades brighter is possible in case the blanks colour was selected too dark.

# structure gingiva



# structure gingiva

## Colour overview



gingiva 1  
bright



gingiva 2  
middle



gingiva 3



gingiva 4  
dark



gingiva 5  
dark orange



gingiva 6  
violet



gingiva 7  
light orange



gingiva 8  
middle orange



gingiva 9  
orange



gingiva 10  
rose



gingiva 11  
bright



gingiva 12  
dark



gingiva 13  
dark pink



gingiva 14  
brown



gingiva 15  
violet



gingiva 16  
brown pink



gingiva 17  
flamingo



gingiva 18  
rose orange



gingiva 19  
dark pink opaque



gingiva 20  
violet brown



gingiva 21  
neutral



gingiva 22  
pink light



gingiva 23  
intensive red



# LFU structure stains

Recommendation for the gingival area



The illustration shows a restoration made of monolithic zirconium oxide, which was individually painted in the gum area with **LFU structure stains** for a natural look before the gingival materials were applied

The below shown **LFU structure stains** without fluorescence are ideal for an individual shade design in the gingival area.



# structure gingiva

## Colour overview



The **structure gingiva** powders are used for reconstruction in the gum area. For this, our gingiva pastes can be individually combined with each other, depending on the colour you want. The illustration shows a dental work in which several **structure gingiva** materials were combined in order to achieve a natural appearance of the gum restoration.



# structure gingiva

Colour overview on the model

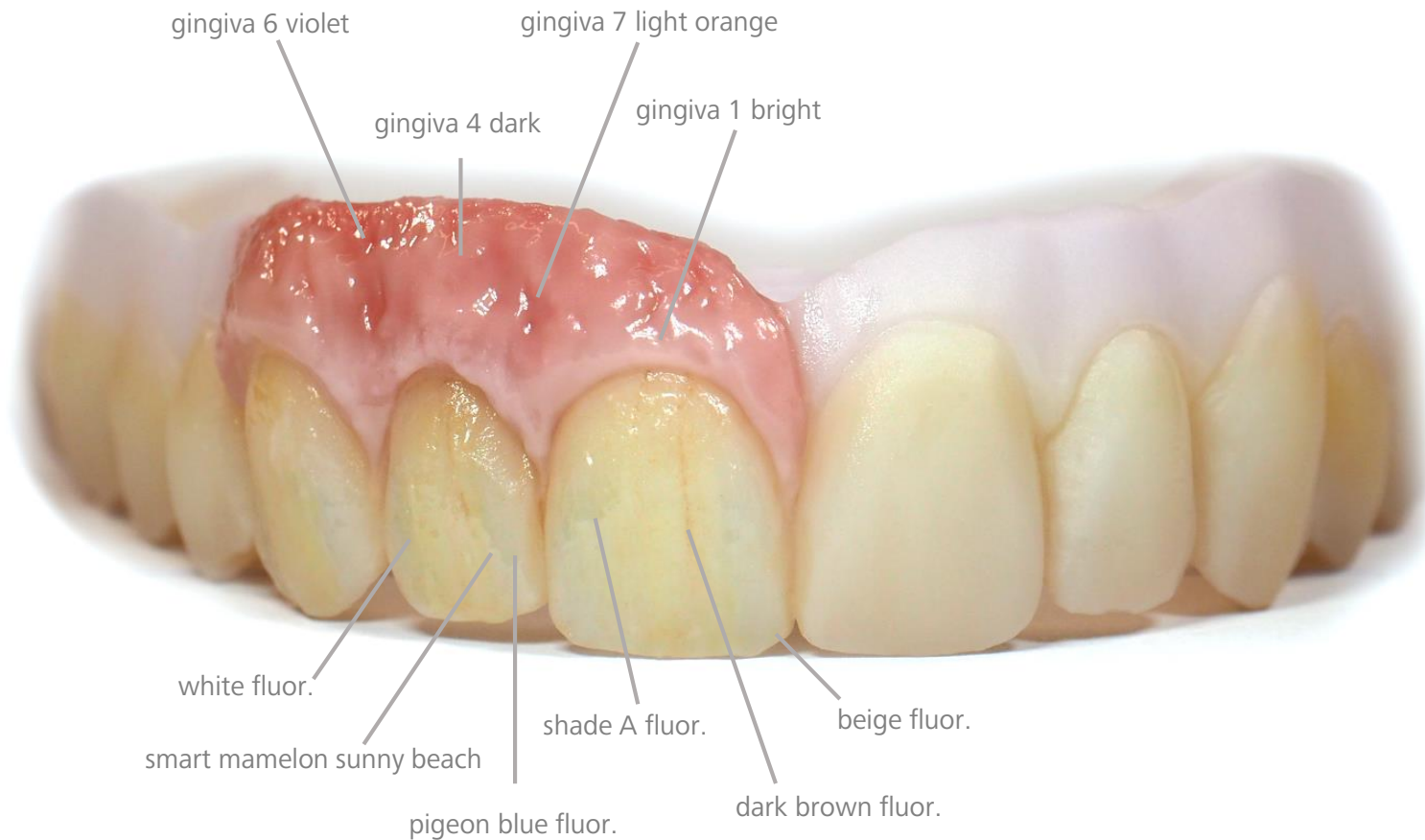


# structure gingiva

## Application example



estetic ceram



With the **LFU structure stains** and the **structure gingiva** pastes, the natural appearance of the gums can be reconstructed perfectly in shape and colour by individual design.



# structure Firing Chart

## LFU structure shades & stains, structure

**Caution:** Underneath given firing temperatures were determined in the "Zubler Vario 300" furnace and are guidelines only. For other types of furnaces, it may be necessary to adapt the firing program on your own responsibility.

Firing parameters	Start temperature [ °C ]	Dry-on time [ min ]	Closing time [ min ]	Heating rate [ K/min ]	Vacuum start [ °C ]	(Vacuum end) Final temperature [ °C ]	(Without vacuum) Holding time [ min ]
HS10PC (lithium disilicate monolithic)	400	3	4	45	670	720	2
HS10PC (lithium disilicate applied with zirkon)	400	3	4	45	670	720	2
zirkon (layering ceramic)	400	3	4	45	670	720	2

**Please note:** For voluminous work, open the oven with an opening time of 2 minutes!

**Note:** With multiple fires, the final temperature can be reduced by 10 - 20 °C depending on the degree of gloss! Depending on the degree of gloss, the final temperature can be increased by 10 - 20 °C during glaze firing!

Firing parameters	Start temperature [ °C ]	Dry-on time [ min ]	Closing time [ min ]	Heating rate [ K/min ]	Vacuum start [ °C ]	(Vacuum end) Final temperature [ °C ]	(Without vacuum) Holding time [ min ]
monolithic zirconia (Y-TZP)	400	3	4	45	670	770	1
classic 920 (metal ceramic)	400	3	4	45	670	770	1
classic (metal ceramic)	400	3	4	45	670	770	1
zirkon press	400	3	4	45	670	770	1

**Please note:** For voluminous work, open the oven with an opening time of 2 minutes!

**Note:** With multiple fires, the final temperature can be reduced by 10 - 20 °C depending on the degree of gloss!

# structure

## Indication

The esthetic ceram **structure** layering paste is only intended for dental applications and for use by trained professionals.

esthetic ceram **structure** is indicated only for the use with following substructure materials:

1. Monolithic tetragonal stabilized zirconia (Y-TZP) with a thermal expansion of approx.  $10.6 \cdot 10^{-6} \cdot K^{-1}$  (25 - 500 °C).
  - a. Tetragonal stabilized zirconia (Y-TZP) with a thermal expansion of approx.  $10.6 \cdot 10^{-6} \cdot K^{-1}$  (25 - 500 °C) veneered with esthetic ceram **zirkon**.
2. Monolithic lithium disilicate glass ceramic materials with a thermal expansion of approx.  $10.0 \cdot 10^{-6} \cdot K^{-1}$  (25 - 500 °C), for example esthetic ceram **HS10PC** pressable glass ceramic.
  - a. Lithium disilicate glass ceramic materials with a thermal expansion of approx.  $10.0 \cdot 10^{-6} \cdot K^{-1}$  (25 - 500 °C), for example esthetic ceram **HS10PC** pressable glass ceramic, veneered with esthetic ceram **zirkon**.
3. Restorations made from esthetic ceram **zirkon press**.
4. PFM restorations veneered with esthetic ceram, **classic** and **classic 920**

## Contraindication

1. Combinations with ceramic materials outside of esthetic ceram's indicated products.
2. Use of non-approved framework materials.
3. Sharp edges and corners on the framework or non-anatomically reduced frame shapes.
4. Dental ceramic and all ceramic restorations are not recommended for patients with bruxism or parafunction.

# structure

## Technical Data

LFU **structure stains & shades** and **structure** pastes comply to all applicable standards for dental porcelains (DIN EN ISO 6872, DIN EN ISO 10993-5). All limits are undercut and thresholds are outperformed.

structure		
physical -chemical properties acc. to DIN EN ISO 6872/ DIN EN ISO 10993-5		
Property	Specification	Measured data
Coefficient of thermal expansion (25 - 475 °C) [ $\cdot 10^{-6} \cdot K^{-1} \pm 0.5$ ]	2 x: 9.5 4 x: 9.5	2 x: 9.5 4 x: 9.5
Transformation temperature Tg [°C $\pm$ 20]	2 x: 495 4 x: 495	2 x: 495 4 x: 495
Bending strength [MPa]	$\geq 50$	145 - 150
Solubility [ $\mu g/cm^2$ ]	< 100	19 - 35
Radioactivity [Bq·g <sup>-1</sup> U <sup>238</sup> ]	< 1	Complies*
Cytotoxicity	No Cytotoxicity	Complies**

\*) covered by report 170231-20-A, 17-02-01, mds, D-Gilching

\*\*) covered by analysis report 17-10238, 17-01-20, FZ Jülich, D-Jülich

LFU structure shades & stains		
physical -chemical properties acc. to DIN EN ISO 6872/ DIN EN ISO 10993-5		
Property	Specification	Measured data
Coefficient of thermal expansion (25 - 450 °C) [ $\cdot 10^{-6} \cdot K^{-1} \pm 0.5$ ]	2 x: 10.0 4 x: 10.0	2 x: 9.8* 4 x: 9.5*
Transformation temperature Tg [°C $\pm$ 20]	2 x: 460 4 x: 460	2 x: 455* 4 x: 455*
Bending strenght [MPa]	$\geq 50$	> 130*
Solubility [ $\mu g/cm^2$ ]	< 100	Complies*
Cytotoxicity	No Cytotoxicity	Complies**
Radioactivity [Bq·g <sup>-1</sup> U <sup>238</sup> ]	< 1	Complies***

\*) data for base material

\*\*) covered by report 170231-20-C, 17-02-01, mds, D-Gilching

\*\*\*) analysis report 17-10237, 17-01-20, FZ Jülich, D-Jülich

# structure

## Chemical Composition

Pigmented glass ceramic paste preparation

**structure** mayor glass ceramic constituents:

SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, K<sub>2</sub>O, Na<sub>2</sub>O, Li<sub>2</sub>O, SrO, B<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, ZnO

**LFU structure shades & stains** mayor glass ceramic constituents:

SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, K<sub>2</sub>O, Na<sub>2</sub>O, Li<sub>2</sub>O, CaO, SrO, B<sub>2</sub>O<sub>3</sub>, ZnO, F

**Pigments:**

inorganic pigments with ceramic host lattices

**Mayor paste gel constituents:**

1,3-Butandiol, water

## Regulatory Information

**structure** and **shades & stains LFU** meet all requirements of applicable directives and regulations for medical devices. The manufacturing complies to a certified Quality Management System acc. **ISO 13485, annex 2** of **Medical Device Directive 93/42, annex IX, Chapter 1 of regulation (EU) 2017/745** and further international requirements.

Medical device classification acc. annex IX, rule 8 of MDD 93/42:	Ila
Medical device classification acc. annex VIII, rule 8 of MDR 2017/745:	Ila

UMDNS Code:	16-187 Dental-ceramics
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MDR Code acc. MDCG 2019-14:	MDT 2003, MDN 1103
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Classification acc. DIN EN ISO 6872:	type 1, class 1
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# structure

## Warnings

Only to be used by trained personnel.

For use in clean working environments only!  
Contamination of the desktop, the working plate, the preheating furnace or any additional materials as waxes or liquids especially with CoCr-alloy residues may cause discoloration of restorations.

When working on ceramic restorations safety glasses should be used.  
Remove dust and fragments by suction.










Be careful of high firing temperatures. Danger of getting burnt! Use oven pincers and gloves!

Due to the different ceramic ovens available on the market, the firing conditions may differ. This must be taken into account and is under the responsibility of the client! The indicated firing temperatures are only APPROXIMATE VALUES!

Recommended storage conditions: 12-38 °C and normal air humidity 40-60%.

Store in closed original containers -protect from sunlight. Do not refill powder mixed with liquid into the container. Use clean and dry spoon, spatula or brush to take out paste from the containers.

## Label Symbols

-  Manufacturer
-  Date of manufacture YYYY MM
-  Medical Device
-  Batch code /LOT number
-  Reference number
-  Unique Device Identification
-  Caution, consult instruction for use

## Manufacturer Information

**esthetic ceram ag**  
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**CE0483**