

# structure

# SD Ceram



Issue 03/2021

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# 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.

Ready to use structure **stains & shades LFU** 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 **structure stains & shade LFU** 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 payed to natural translucency, opalescence and fluorescence.

With **structure shades & stains LFU** 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 structure **stains & shades LFU** 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.

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**structure stains & shades LFU** 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» **SD** Ceram



- 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

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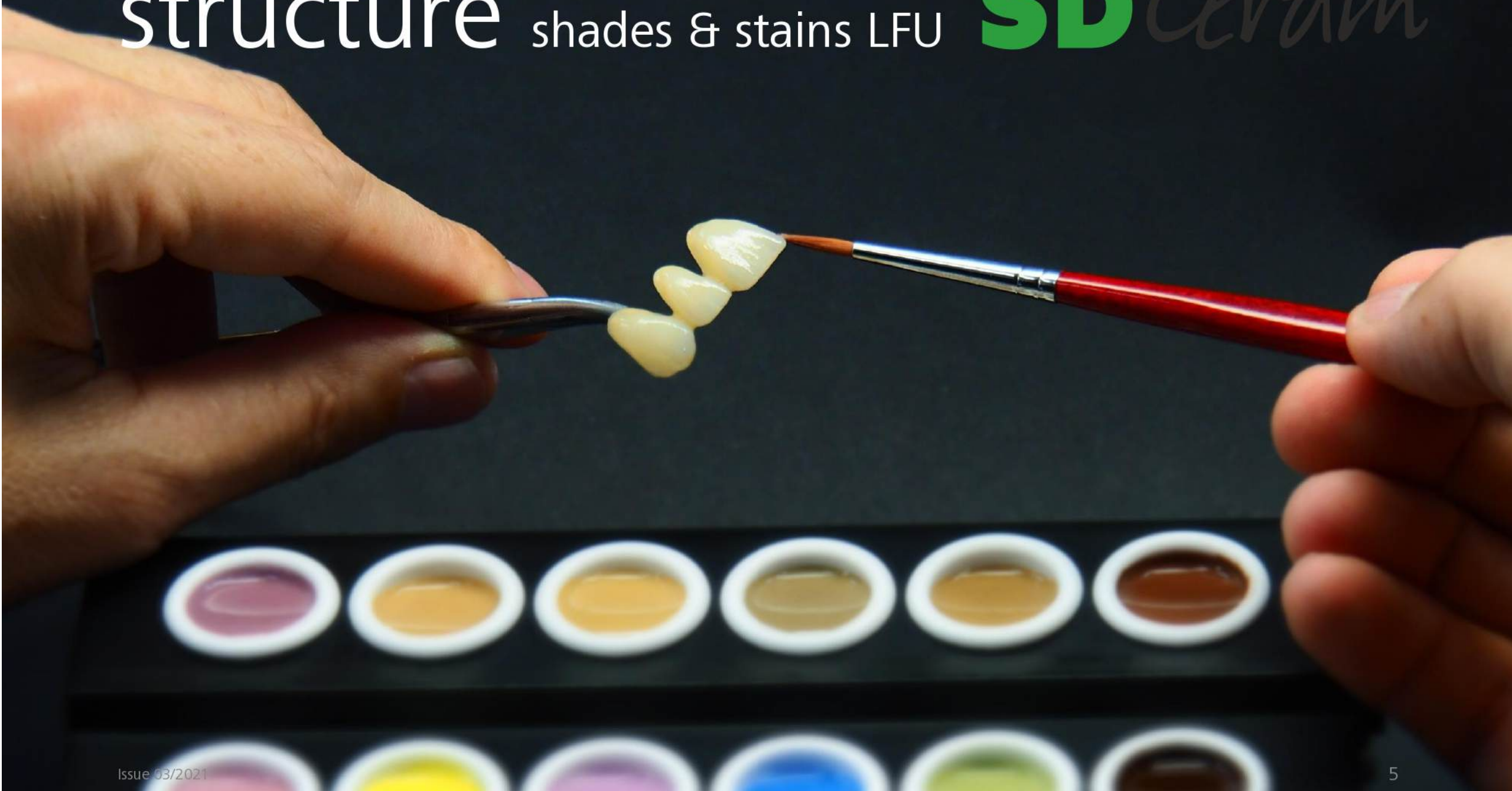
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# structure shades & stains LFU **SD** Ceram



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# structure shades LFU

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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.



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# structure stains LFU

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# structure stains LFU

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white fluor.



snow white fluor.



vanilla fluor.



beige fluor.



yellow fluor.



yellow 2 fluor.



orange fluor.



orange middle fluor.



orange 2 fluor.



champagne fluor.



safari fluor.



safari + fluor.



olive fluor.



khaki fluor.



rose fluor.



rose pink



red purple fluor.



blue rose fluor.



purple fluor.



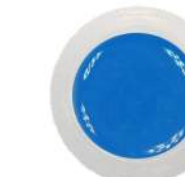
red



red bright



smoke fluor.



blue fluor.



pigeon blue fluor.



green fluor.



brown fluor.



dark brown fluor.



red brown 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.





# structure shades & stains LFU

## SD Ceram

Burned on Zirconium Oxide



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



# structure

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# structure Colour overview

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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

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### transpa



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

# SD CeraM

flu



flu 2



flu 3



flu 4

neutral



n-deep



n-medium



n-light

opal, incisal, clear



opal



incisal 2



clear

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 2
- opal
- clear



# structure «application»

# SD CeraM

sintered Zirconium Oxide

nature colour

individual colour



## Instructions

- Mix **structure shade & stains LFU** 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 **structure shades & stains LFU pastes** and **structure pastes**.
- **Caution:** **structure shade & stains LFU** 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 **structure shades & stains LFU**- 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 **structure shades & stains LFU pastes**.
- Colourations (refer to pages 15-18).

## 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 15-18).

## Glaze paste application

- After grinding apply **structure glaze fluor.** paste thin and even over the complete restoration. Degree of shine can be adjusted by polishing tools after glaze firing.

## Firing

- Firing according to firing table (refer to page 28).





# structure «nature colour»

# SD CeraM

## Application example:

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

sintered Zirconium Oxide



shades & stains LFU



structure



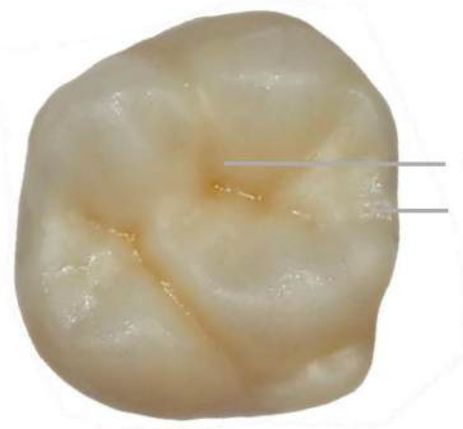
glaze finish



# structure «nature colour»

# SD Ceraim

shades & stains LFU



orange 2 fluor.  
blue fluor.

structure



incisal 2

glaze finish



glaze fluor.



violet fluor.  
pigeon blue fluor.  
blue fluor.  
shade A fluor.



incisal 2



glaze fluor.



# structure «individual colour»

# SD CeraM

## Application example:

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

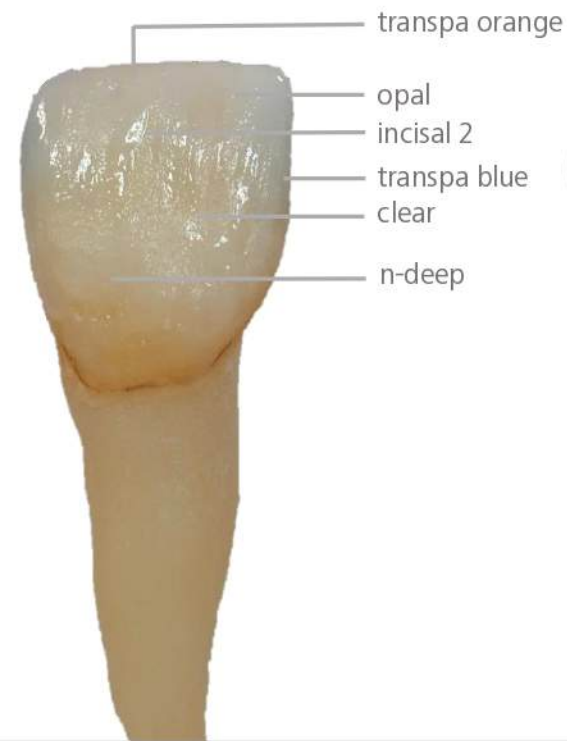
sintered Zirconium Oxide



shades & stains LFU



structure



glaze finish





# structure «individual colour»

# SD Ceraam

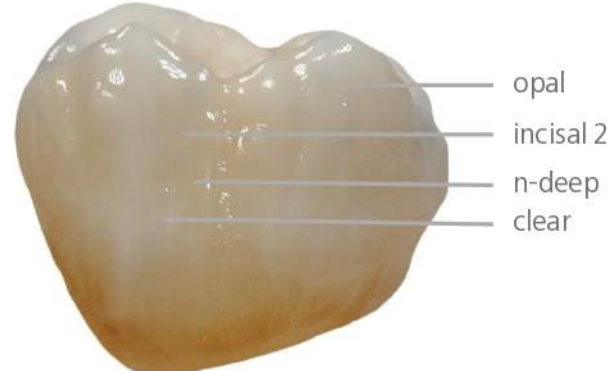
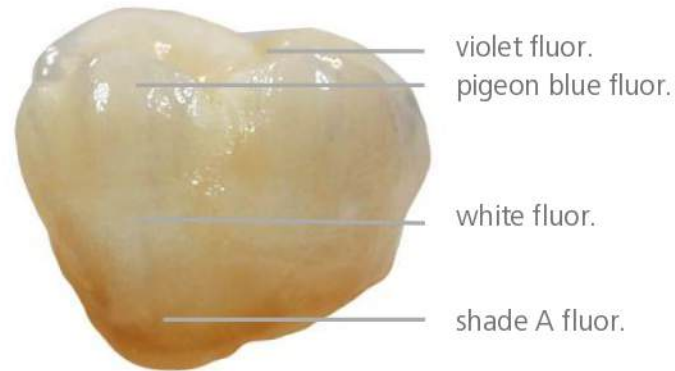
shades & stains LFU



structure



glaze finish



# structure «shade matching»

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sintered Zirconium Oxide

stained and structured



VITA classical A1-D4® Shade guide

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

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# structure «colour shift: A2 to A4» **SD** Ceraam



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





# structure «colour shift: A4 to A2» **SD** Ceram



With structure shades & stains LFU and structure pastes (neutral) a colour shift up to three V-shades brighter is possible in case the blanks colour was selected too dark.



# structure gingiva

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# structure gingiva

## Colour overview

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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

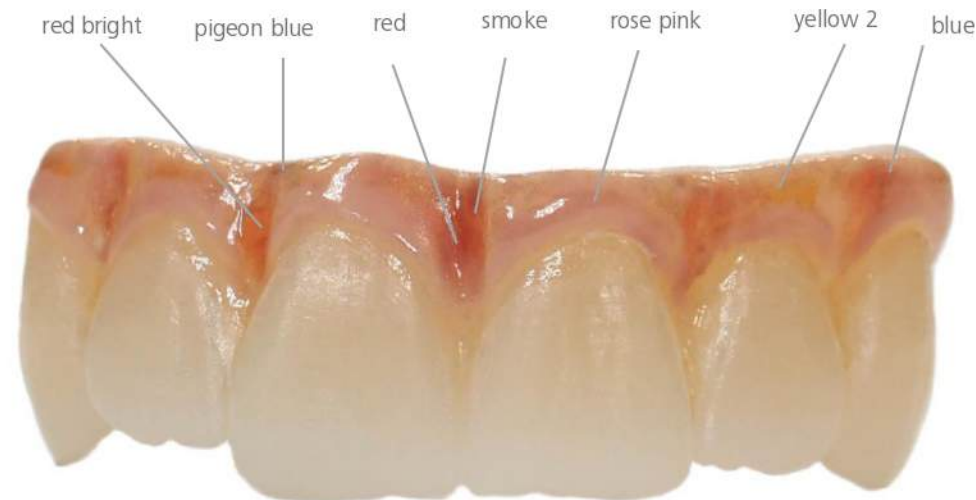




# structure stains LFU

Recommendation for the gingival area

**SD** CeraM



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

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



# structure gingiva

# SD CeraM

## 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

# SD CeraM



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

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# structure gingiva

Application example

# SD CeraM



With the **structure stains LFU** 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

## structure shades and stains LFU, 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<br>[ °C ] | Dry-on time<br>[ min ] | Closing time<br>[ min ] | Heating rate<br>[ K/min ] | Vacuum start<br>[ °C ] | (Vacuum end)<br>Final temperature<br>[ °C ] | (Without vacuum)<br>Holding time<br>[ min ] |
|------------------------------|-----------------------------|------------------------|-------------------------|---------------------------|------------------------|---------------------------------------------|---------------------------------------------|
| HS10PC (monolithic)          | 400                         | 3                      | 4                       | 45                        | 670                    | 720                                         | 2                                           |
| HS10PC (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!

| Firing parameters             | Start temperature<br>[ °C ] | Dry-on time<br>[ min ] | Closing time<br>[ min ] | Heating rate<br>[ K/min ] | Vacuum start<br>[ °C ] | (Vacuum end)<br>Final temperature<br>[ °C ] | (Without vacuum)<br>Holding time<br>[ min ] |
|-------------------------------|-----------------------------|------------------------|-------------------------|---------------------------|------------------------|---------------------------------------------|---------------------------------------------|
| Monolithic Zirkonoxid (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 **structure** layering paste is only intended for dental applications and for use by trained professionals.

**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 **zirkon**.
2. Monolithic lithiumdisilicate glass ceramic materials with a thermal expansion of approx.  $10.0 \cdot 10^{-6} \cdot K^{-1}$  (25 - 500 °C), for example **HS10PC** pressable glass ceramic.
  - a. Lithiumdisilicate glass ceramic materials with a thermal expansion of approx.  $10.0 \cdot 10^{-6} \cdot K^{-1}$  (25 - 500 °C), for example **HS10PC** pressable glass ceramic, veneered with **zirkon**.
3. Restorations made from **zirkon press**.

# SD Ceram

## Contraindication

1. Combinations with ceramic materials outside of 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 stains & shades LFU 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<br>(25 - 475 °C) [ $10^{-6} \cdot K^{-1} \pm 0.5$ ] | 2 x: 9.5        | 2 x: 9.5      |
|                                                                                      | 4 x: 9.5        | 4 x: 9.5      |
| Transformation temperature Tg<br>[°C ± 20]                                           | 2 x: 495        | 2 x: 495      |
|                                                                                      | 4 x: 495        | 4 x: 495      |
| Bending strength<br>[MPa]                                                            | ≥ 50            | 145 - 150     |
| Solubility<br>[µg/cm²]                                                               | < 100           | 19 - 35       |
| Radioactivity<br>[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

| structure shades & stains LFU                                                        |                 |               |
|--------------------------------------------------------------------------------------|-----------------|---------------|
| physical -chemical properties acc. to DIN EN ISO 6872/ DIN EN ISO 10993-5            |                 |               |
| Property                                                                             | Specification   | Measured data |
| Coefficient of thermal expansion<br>(25 - 450 °C) [ $10^{-6} \cdot K^{-1} \pm 0.5$ ] | 2 x: 10.0       | 2 x: 9.8*     |
|                                                                                      | 4 x: 10.0       | 4 x: 9.5*     |
| Transformation temperature Tg<br>[°C ± 20]                                           | 2 x: 460        | 2 x: 455*     |
|                                                                                      | 4 x: 460        | 4 x: 455*     |
| Bending strenght<br>[MPa]                                                            | ≥ 50            | > 130*        |
| Solubility<br>[µg/cm²]                                                               | < 100           | Complies*     |
| Cytotoxicity                                                                         | No Cytotoxicity | Complies**    |
| Radioactivity<br>[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



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