DDShadeConcept®

As we are continually developing our products, we reserve the right to change them at any time. The latest digital version of these instructions for use can be found on our homepage at www.dentaldirekt.de
This version supersedes all previous versions.

WWW

dentaldirekt.de/
en/downloads

INDEX

I) GENERAL INFORMATION

Valid for the liquid systems:

- DD Basic Shade
- DD Art Elements
- DD Pro Shade Z
- DD Pro Shade C

1. Indications

DD Basic Shades are universally applicable liquids for coloring pre-sintered zirconia constructions made from DD Bio Z, DD Bio ZX², DD cube ONE® or DD cubeX²® zirconia milling blanks for the manufacture of dental restorations.

DD Art Elements are universally applicable liquids for coloring and individualizing pre-sintered zirconia constructions made from DD Bio Z, DD Bio ZX², DD cube ONE® or DD cubeX²® zirconia milling blanks for the manufacture of dental restorations.

DD Pro Shade Z are liquids especially for coloring pre-sintered zirconia constructions made from DD Bio Z, DD Bio ZX² or DD cube ONE® zirconia milling blanks for the manufacture of dental restorations.

DD Pro Shade C are liquids especially for coloring pre-sintered zirconia constructions made from DD cubeX²® zirconia milling blanks for the manufacture of dental restorations.

2. Contraindications

Do not use if there is an intolerance to the constituents that are contained in these products. Please always observe the contraindications before using any Dental Direkt zirconia products. The coloring liquids are not compatible with zirconia blanks produced by other manufacturers.

3. Safety instructions

Please observe the information contained in the most recent version of the safety data sheet. Please wear gloves, safety glasses and a face mask to avoid any irritations. Please do not eat, drink and smoke when handling the liquid.
The materials may only be processed by trained personnel who must use tried and tested techniques.

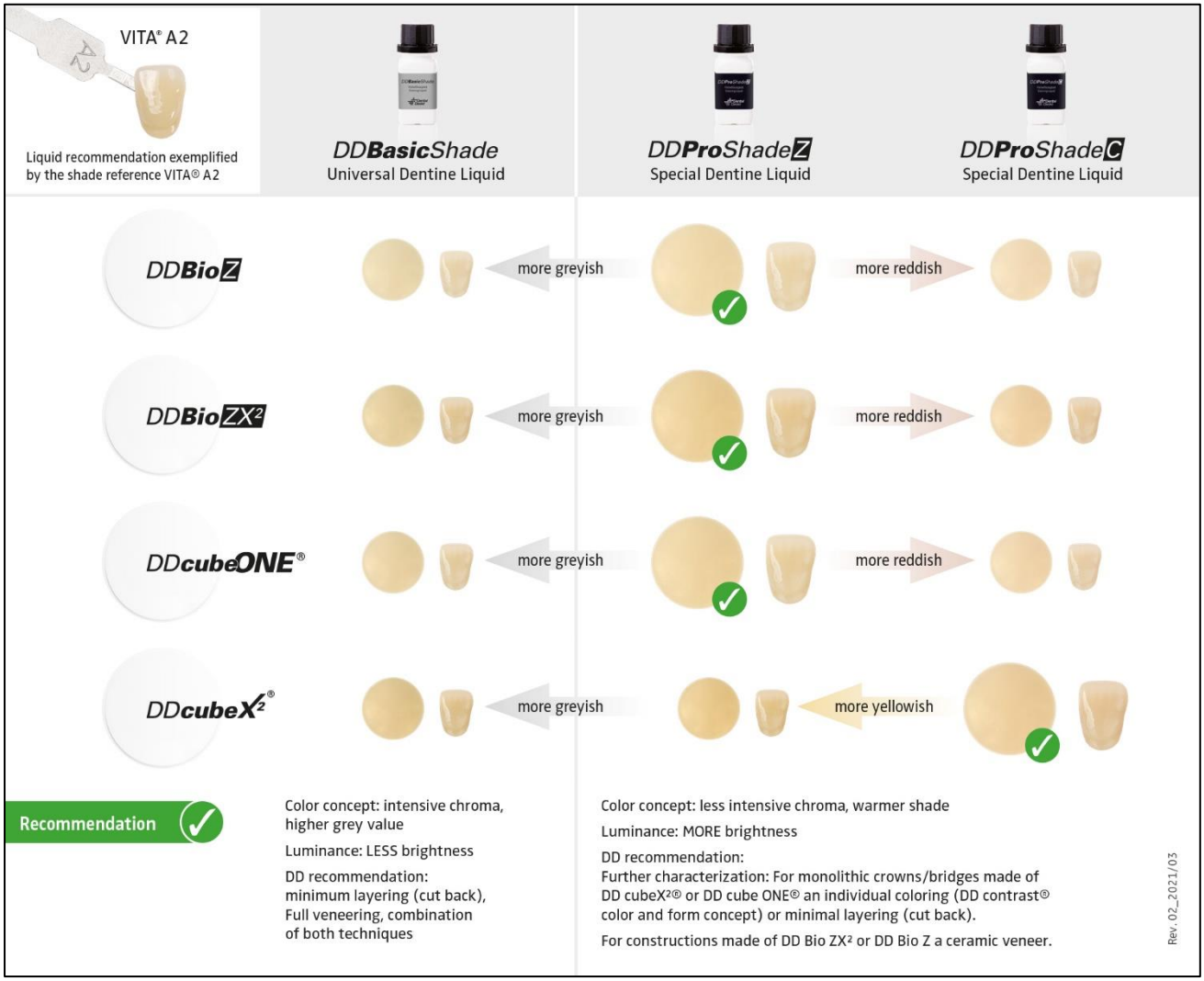
4. Handling and storage

Ensure that the bottle is still intact before processing the liquid for the first time. The liquids must be stored in the original container, which must be kept tightly closed at a max. temperature of 25°C, or ideally in a refrigerator (6-8°C). After using the DD Color Box, the liquid must be poured back into the original container for storage.
To avoid contamination, liquid that has already been used should not be mixed with unused liquid. Failure to comply with this instruction may result in color changes.
If stored correctly in its original container, the shelf life of this product is 2 years.

II) COLORING LIQUIDS - COLOR VARIANTS

1. Dentine liquids: DD Basic Shade, DD Pro Shade Z and DD Pro Shade C

The DD Shade Concept® coloring liquids available from Dental Direkt offer a wide range of color options and deliver reproducible and highly aesthetic results. You can choose which system suits your individual requirements the most.



There are 16 dentine liquid shades and 3 bleach shades available for base colorations. The incisal liquids from the “DD Art Elements” range can be used with all three types of liquids. The same applies to the effect colors from the “DD Art Elements” range, which can be used to individualise the colorations (see page 7).

The color combination table below is intended to serve as a guide for the selection of dentine and incisal liquids in accordance with the chosen coloration technique.

Color combination table for dentine and incisal liquids:

Target color in accordance with VITA®* shade guide	Dentine liquid	Incisal liquid	
	DDBasicShade DDProShade C DDProShade Z	DDArtElements	
		Immersion	Painted
0M1	0M1	SO / SO Bright	SO / SO Bright
0M2	0M2	SO / SO Bright	SO / SO Bright
0M3	0M3	SO / SO Bright	SA1
A1	A1	SO / SO Bright	SA1
A2	A2	SO / SO Bright	SA1
A3	A3	SO / SO Bright	SA2
A3,5	A3,5	SO / SO Bright	SA2
A4	A4	SO / SO Bright	SA2
B1	B1	SO / SO Bright	SA1
B2	B2	SO / SO Bright	SA1
B3	B3	SO / SO Bright	SA2
B4	B4	SO / SO Bright	SA2
C1	C1	SO / SO Bright	SC1
C2	C2	SO / SO Bright	SC1
C3	C3	SO / SO Bright	SC2
C4	C4	SO / SO Bright	SC2
D2	D2	SO / SO Bright	SC1
D3	D3	SO / SO Bright	SC2
D4	D4	SO / SO Bright	SC2

**VITA® is the manufacturer's registered trademark*

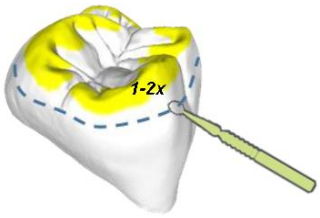
2. Incisal liquids and effect colors: DD Art Elements

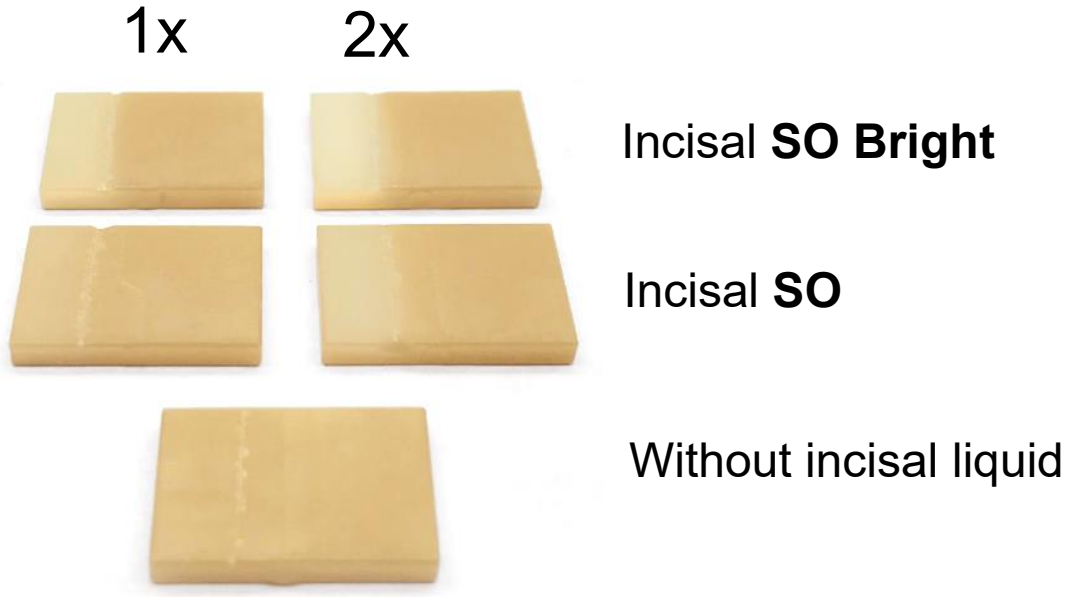
Incisal liquids

There are 6 different incisal liquids available for occlusal and incisal individualisation:

SA1	(reddish / brown shade)	:	for the painting technique (0M3,·A1,·A2,·B1,·B2)
SA2	(reddish / brown shade)	:	for the painting technique (A3,·A3,5,·A4,·B3,·B4)
SC1	(grey shade)	:	for the painting technique (C1,·C2,·D2)
SC2	(grey shade)	:	for the painting technique (C3·C4·D3·D4)
SO	(neutral shade)	:	for the painting technique (0M1,·0M2) for the immersion technique (all dentine liquids)
SO Bright	(neutral shade / strong brightening)	:	for the painting technique (0M1,·0M2) for the immersion technique (all dentine liquids)

The stronger brightening in the incisal area with the SO Bright incisal liquid, compared to the SO incisal liquid, is illustrated in the following figure:





The zirconia specimen, made of DD cube ONE®, dipped in DD Pro Shade Z col. A4 for 15 seconds.

Effect colors

There are ten highly concentrated effect colors available that can be used to tint the dentine liquids or to neatly characterise fissures, incisal areas or gingival areas.

WARNING!
If you intend to mix the DD Art Elements effect colors with the dentine liquids, you should always add the specified amount on the full packaged unit (30 ml or 100 ml) to the dentine liquid. This will ensure that you are able to achieve color results that can be easily replicated.

Vario: Brightening liquid

The color intensity of the liquid can be easily reduced to suit individual requirements by mixing it with DD Art Elements Vario. To achieve reproducible color results, we recommend the use of the dosing syringe that is included in the DD Art Elements Vario set, which dilutes the 30 ml or 100 ml Dental Direkt dentine liquid.

Examples of mixing ratios needed to achieve the dentine liquid shades in %						
DD Art Elements Vario	**0%**	**5%**	**10%**	**15%**	**20%**	**25%**
Dental Direkt Dentine Liquid	**100%**	**95%**	**90%**	**85%**	**80%**	**75%**

Examples of mixing ratios for the 30 ml dentine liquid						
DD Art Elements Vario	0.0 ml	1.6 ml	3.3 ml	5.3 ml	7.5 ml	10.0 ml
Dental Direkt Dentine Liquid	30 ml	30 ml	30 ml	30 ml	30 ml	30 ml

Examples of mixing ratios for the 100 ml dentine liquid						
DD Art Elements Vario	0.0 ml	5.3 ml	11.1 ml	17.6 ml	25.0 ml	33.3 ml
Dental Direkt Dentine Liquid	100 ml	100 ml	100 ml	100 ml	100 ml	100 ml

This information should serve as a basic guide when diluting the dentine liquids with DD Art Elements Vario. It is advisable to prepare a color sample before use.

III) PIGMENTATION OF THE LIQUIDS

All colors have a special pigmentation to make the coloration process easier for the user. This pigmentation does not affect the color result after sintering.

DD Basic Shade, DD Pro Shade Z & DD Pro Shade C (all dentine liquids)
→ **Red pigmentation.**

DD Art Elements incisal liquids (SA1, SA2, SC1, SC2, SO, SO Bright)
→**Yellow pigmentation.**

DD Art Elements effect colors: light pink, purple, yellow, orange
→ **Orange pigmentation.**

DD Art Elements effect colors: light brown, dark brown
→ **Green pigmentation.**

DD Art Elements effect colors: light grey, dark grey, graphite
→ **Grey-violet pigmentation.**

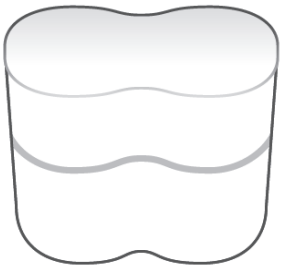
DD Art Elements effect color: Blue
→ **Blue pigmentation.**

IV) COLORING TOOLS

Plastic-Tweezers

Brush

DD Bio Z "M" applicator



DD Color Box

WARNING!
It is advisable to use instruments made from plastics in order to avoid metal traces on the dental constructions.

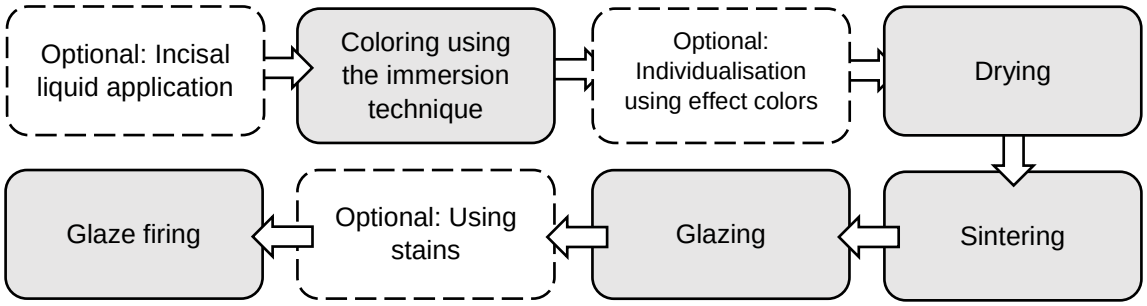
WARNING!
Please keep the DD Color Box closed when not in use to ensure that the liquid does not become contaminated. We recommend that the coloring liquid is stored in the original container, which is designed to be kept firmly closed.

V) COLORING TECHNIQUES - OVERVIEW

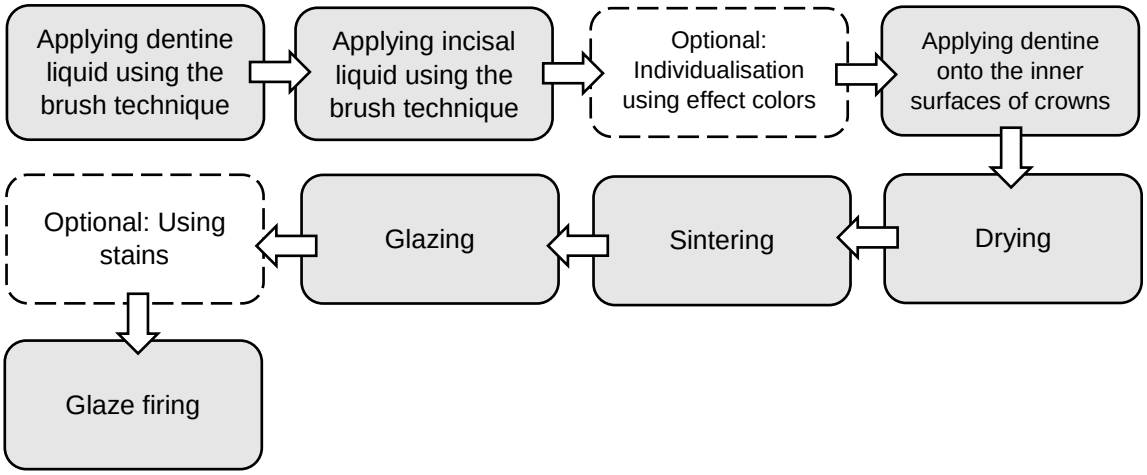
The DD Shade Concept® coloring liquids available from Dental Direkt offer a wide range of color options and deliver reproducible and highly aesthetic results.

You can choose from two coloring options: immersion or paint.

1. Immersion technique (quick, easy and reproducible) – see chapter VI

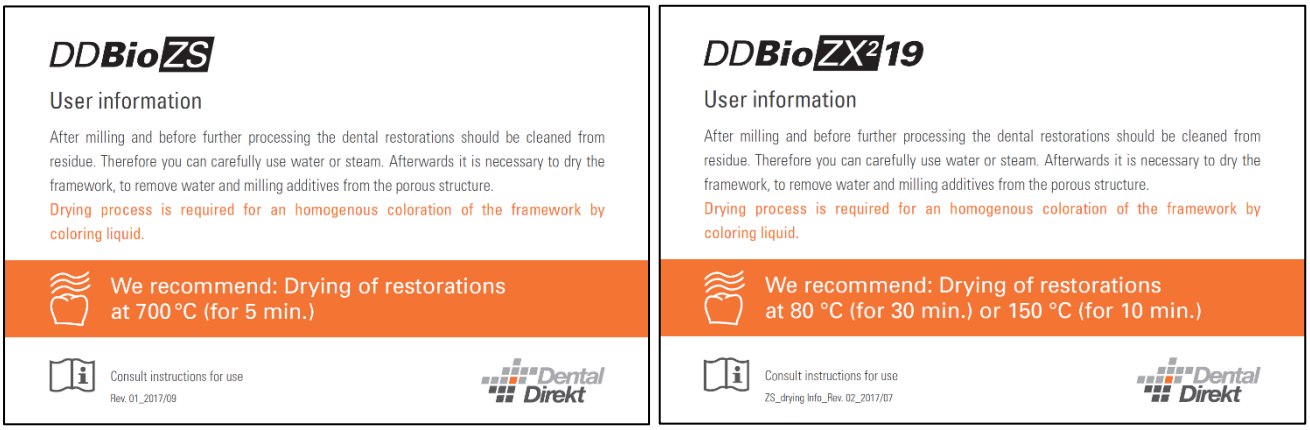


2. Paint technique (individual & artistic) – see chapter VII



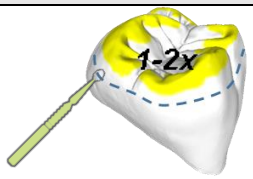
VI) IMMERSION TECHNIQUE - STEP BY STEP

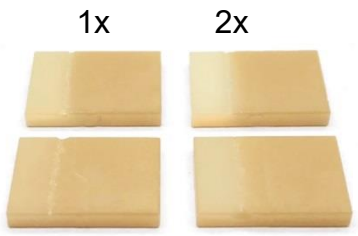
WARNING!
In case of wet processing or wet grinding (e.g. by using DD Bio ZS, DD Bio ZX² 19), drying process should be realized in a (ceramic) furnace to remove coolant or lubricant from the porous structure.
Drying process is required for a homogenous coloring result when using DD Shade Concept® coloring liquid!



WARNING!
The liquids must be shaken well before use!

IMMERSION TECHNIQUE - STEP BY STEP





1. Applying the SO / SO Bright incisal liquid:

- The incisal liquid can be applied with a suitable applicator (e.g. snowflake) or a brush
- It is important to ensure that the applicator is moderately wet to avoid large quantities of liquid from dispersing over the construction.
- Apply the incisal liquid to the upper cusps and to the edges of the incisal area 1 to 2 times.

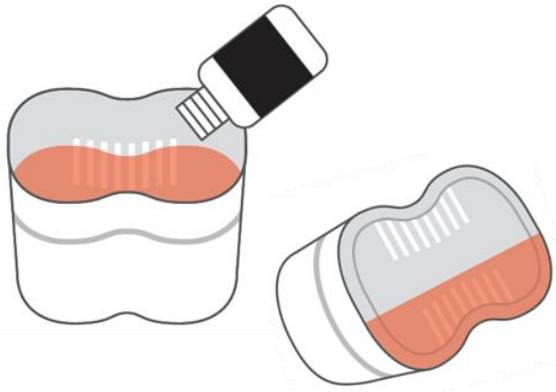
WARNING!

Applying too much incisal liquid will cause all the dentine color to become brighter. The incisal liquid should not be applied beyond the dashed blue line shown on the crown.

IMMERSION TECHNIQUE - STEP BY STEP

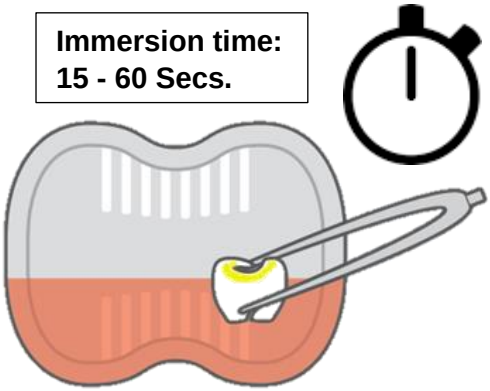
WARNING!

Immersion should take place quickly after the incisal liquid has been applied!



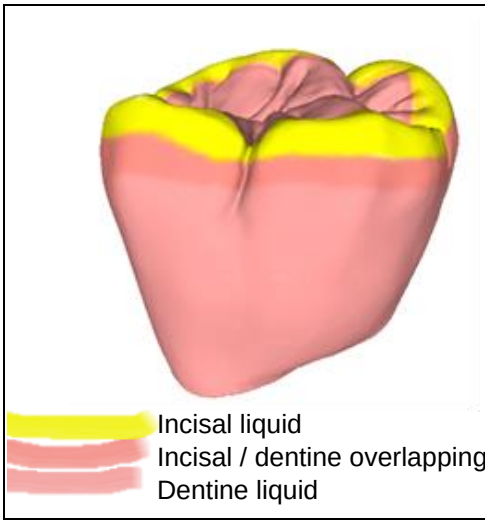
2. Preparation for the immersion process:

- We recommend that you use the DD Color Box for the immersion process.
- Tip:
  When using less than 100 ml of the liquid, you can create the necessary volume of liquid for immersion by tilting the DD Color Box.



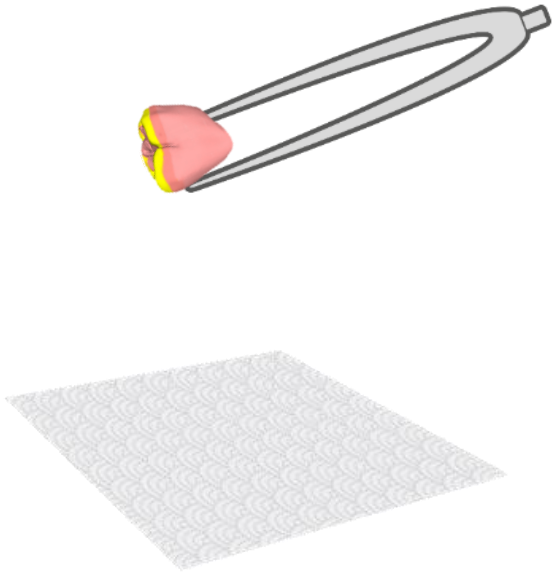
3. Immersion process

- Use the plastic tweezers to carefully place the construction into the sieve insert inside the DD Color Box.



- During the immersion process the dentine liquid and the incisal liquids blend together, which creates an overlapping area between both areas.
- The construction can be easily lifted out of the DD Color Box using the sieve insert once the immersion time has been completed.
- Alternatively, this can be carried out using plastictweezers.

IMMERSION TECHNIQUE - STEP BY STEP

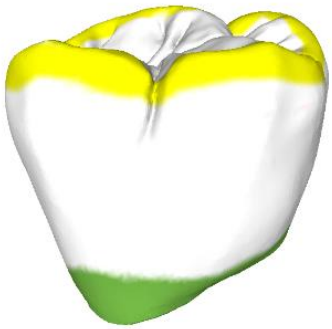


- Carefully dab away any surplus liquid (especially on the inner sides of the crown and in the occlusal area) with a paper towel or blow this away using compressed air.

WARNING!

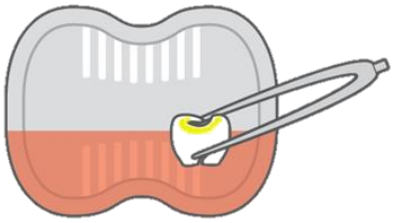
The colored construction can be drained for a few moments on a clean, absorbent pad (e.g. kitchen towel), however it cannot be stored on this type of surface.

TIP 1



A combination with the brush technique enables individual effects to be achieved also when using the immersion technique.

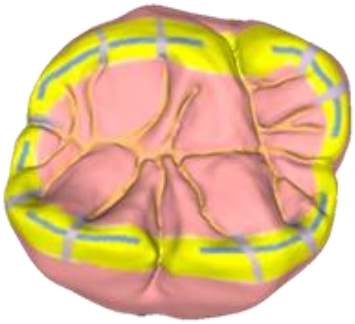
- Apply the SO / SO Bright incisal liquid as previously described.
- Once the SO / SO Bright incisal liquid has been applied to the upper cusps and to the edges of the incisal area, the tooth neck can also still be coloured.
- Depending on the current colour of the tooth, it is possible to select one of the following color options to color the tooth neck: DD Art Elements light brown / dark brown, DD Art Elements orange, dentine liquid (one shade darker)



Pre-drying:
10 mins.

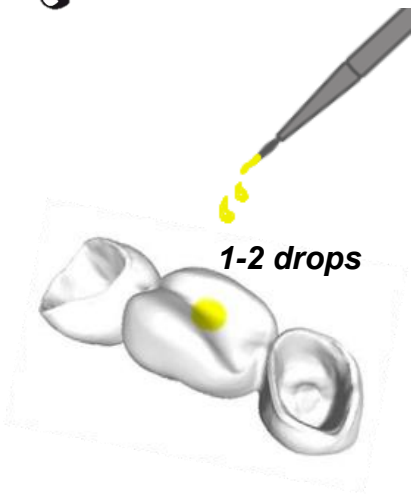
- Carry out the immersion process in the desired dentine liquid.
- Then pre-dry for 10 minutes

TIP 1 (continued)



- The pre-dried crown can now be individualised further with effect colors in the “blocked incisal area” and is then pre-dried before sintering as described under the heading entitled “Drying”.
- Tip: Use the DD Art Elements effect colors to individualise as described on page 16.

TIP 2



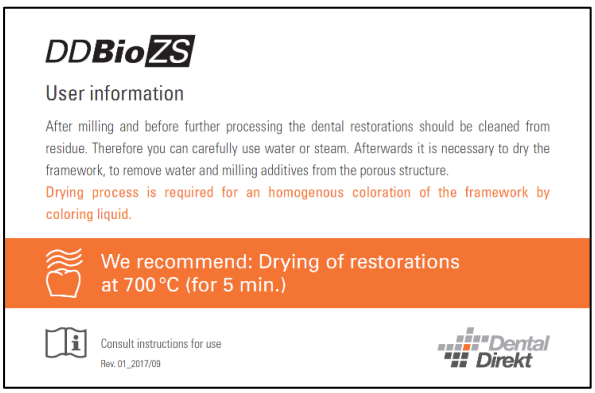
Blocking of bulky bridge elements with incisal liquid using the immersion technique to prevent the dentine liquid from permeating too deeply.

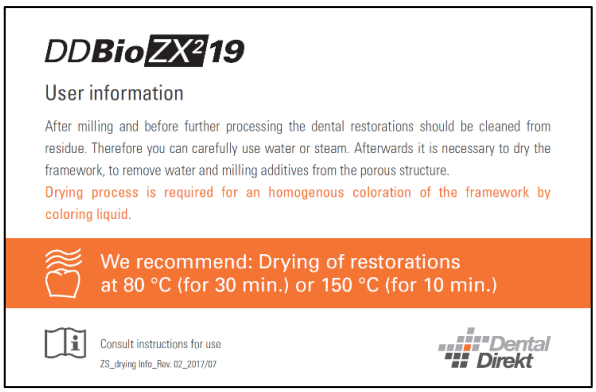
- Particularly, in the case of highly translucent zirconia, blocking can prevent bridge elements from appearing darker following longer immersion times than would occur with thinly walled crowns or caps.
- Before the immersion process, apply 1-2 generous drops of SO / SO Bright DD Art Elements basally and allow to slowly permeate.

Without blocking *With blocking* *VITA®* color B2*

**VII) BRUSH TECHNIQUE - STEP BY STEP*

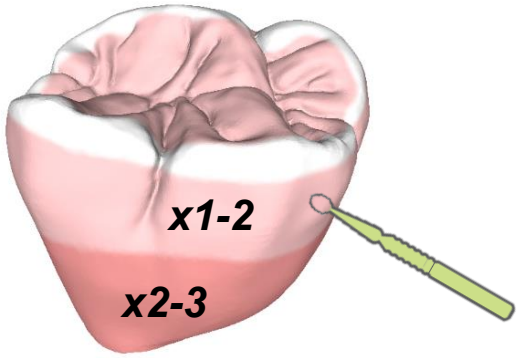
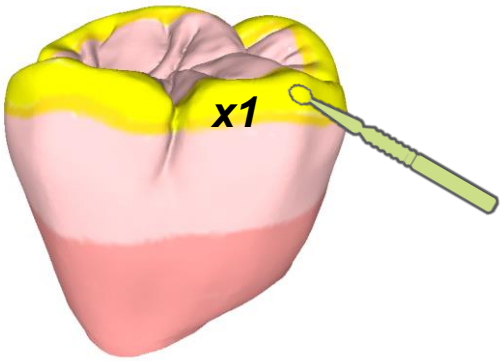
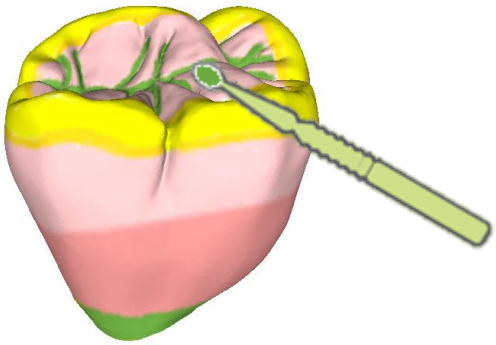
WARNING!
In case of wet processing or wet grinding (e.g. by using DD Bio ZS, DD Bio ZX² 19), drying process should be realized in a (ceramic) furnace to remove coolant or lubricant from the porous structure.
Drying process is required for a homogenous coloring result when using DD Shade Concept® coloring liquid!



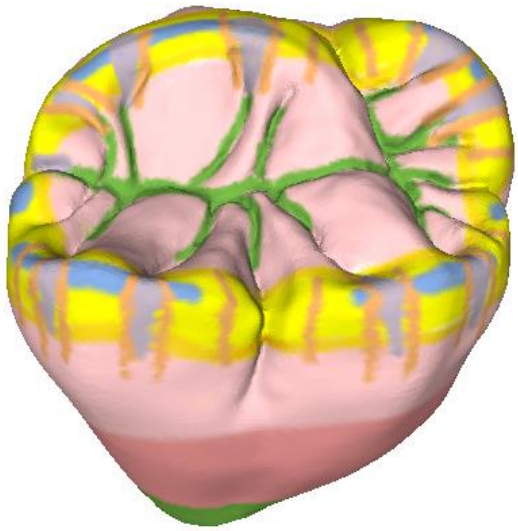


*VITA® is the manufacturer's registered trademark

WARNING!
The liquids must be shaken well before use!

BRUSH TECHNIQUE - STEP BY STEP	
	**1. Apply dentine**
	**2. Apply incisal liquid (SA/SC - colors)**
	**3. Customisation using effect colors** • 1-2 times dark brown / light brown (select according to the color of the tooth)

BRUSH TECHNIQUE - STEP BY STEP



Effect colors application sequence:

1. dark brown, light brown
2. blue
3. light grey, dark grey, graphite
4. light pink, purple, yellow, orange

Accentuation using effect colors:

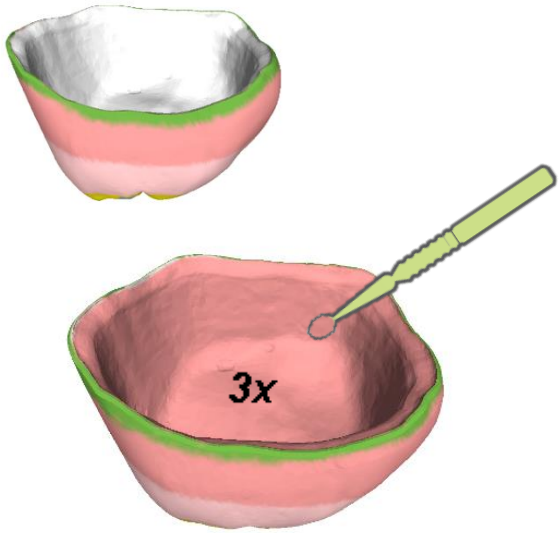
Shaping of (discolored) fissures, crown margins
→ Yellow, orange, light brown, dark brown effect

Even deeper effects for tooth cusps and incisal edges
→ Purple, blue, light grey, dark grey, graphite effect

Shaping of gingival areas
→ Light pink effect

WARNING!

Always carefully clean and dry the brush before using a new color.

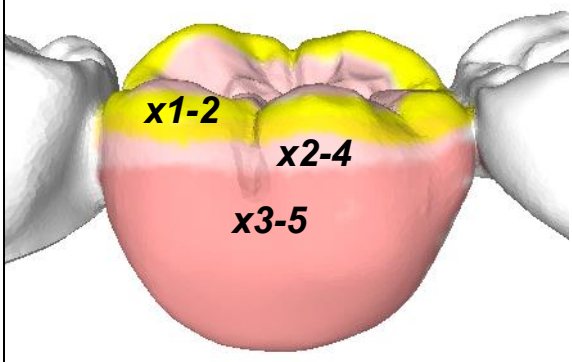


4. Applying dentine in the inner surfaces of the crown

To achieve optimal color results, it is finally necessary to color the inner surfaces of the crown with dentine liquid. The coloring liquid should be applied liberally a number of times to ensure that the material can completely permeate through.

WARNING!

Ensure that colored constructions are stored on non-absorbant pads!

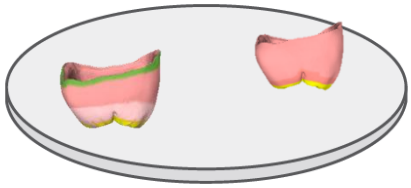
BRUSH TECHNIQUE - STEP BY STEP	
	**Painting bulky components**

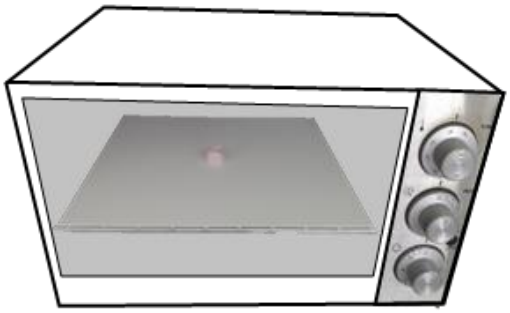
WARNING!

When coloring bulky bridge elements the number of color applications must be increased. This also applies to crowns, partial crowns and caps with thicker walls.

VIII) DRYING

We recommend that you use a small fan-assisted domestic oven with a timer switch to pre-dry the constructions because, unlike other drying methods, this will virtually guarantee an even distribution of heat.





Drying time: 10 - 30 mins.
Temperature: 80 - 100°C

Place the dental construction on a ceramic base in the oven ensuring that the air can circulate freely around it.

WARNING!

To achieve a uniform color result, the dental construction should be dried immediately after the color application. We recommend that you position crowns and bridges on their occlusal surfaces.

WARNING!

You should only ever use this oven to dry your zirconia constructions and never use it to cook food!

IX) SINTERING

For **optimal color results** with all Dental Direkt zirconia materials (DD Bio Z, DD Bio ZX², DD cube ONE® and DD cubeX²®) we recommend:

Final temperature:	**1450°C**
Dwell:	**2 hrs**

To achieve a higher level of light transmittance when using DD Bio ZX², the final temperature can be raised: Final temperature: 1530°C / Dwell: 2 hrs

WARNING!

Brighter color results are achieved at higher sintering temperatures!

Sintering cycle*:

Normal furnace filling without a cover

↑ Heat up to 900°C (8°C/min),
→ 30 mins dwell at 900°C,
↑ Heat to the final temp. 1450°C (3°C/min),
→ 120 mins dwell at 1450°C,
↓ Cool to a min. of 200°C (10°C/min)

***IMPORTANT!**

It is very important that you observe our separate sintering instructions for DD Bio Z, DD Bio ZX², DD cube ONE® and DD cubeX²® when selecting the optimum oven programme.

X) GLAZING

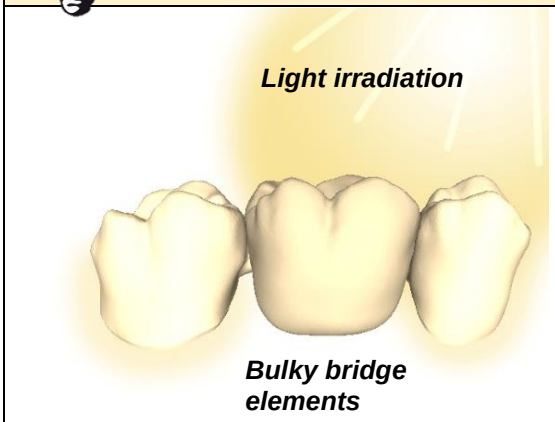
The application of an additional glaze does not only ensure that the desired shade is matched precisely, but it also ensures that the restoration appears natural and is aesthetically pleasing.

Firing chart for DD Nature Zr Glaze:

Firing	Base temp. [°C]	Drying [min]	Heating rate [°C/min]	Final temp. [°C]	Dwell [min]	Vacuum	Cooling / lowering [min]
Glaze firing	440	2	45	815	1	off	3
Glaze firing full anatomical	440	2	45	830	1	off	3

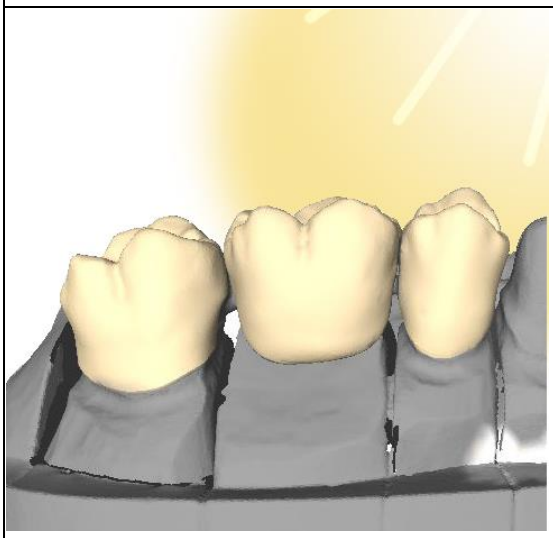
We recommend the use of glazes, which can be fired below 850°C. Higher temperatures and repeated glazes result in color changes.

TIP 3



Color assessment on the model

- Light radiation influences color perception.
- Caps are more translucent than bulky bridge elements, which means that the bulky bridge element can appear darker



Always place the bridge on the model to assess the color!