

INSTRUCTIONS FOR USE

CREATION ZI-F

Zirconium Dioxide Ceramics



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INTRODUCTION

Natural light dynamics

Creation ZI-F: naturally brilliant – brilliantly natural

Creation ZI-F is a tried and tested zirconium dioxide ceramic. It is perfectly suited to veneering any kind of zirconium dioxide framework.

At the same time, the modular materials are also an ideal choice as add-on materials for Creation ZI-CT because their firing temperature is about 100 °C lower than the new, high-fusing zirconium dioxide veneering ceramic ZI-CT.

Creation ZI-F is an extremely versatile zirconium dioxide ceramic with high natural light reflection, combined with all the material-related advantages of zirconium dioxide.

With the unique effect materials, exceptional colour nuances can also be created rapidly and comfortably – for maximum impact with minimum effort.

Creation ZI-F – natural light dynamics!

The brilliance of Creation ZI-F:

- Natural brilliance and iridescent light refraction
- Pleasant to grind due to lower glass content
- High durability, perfectly matched to the CTE of zirconium
- Versatile: Can be used as a veneering ceramic, layering ceramic and supplementary ceramic for zirconium dioxide

FRAMEWORK DESIGN

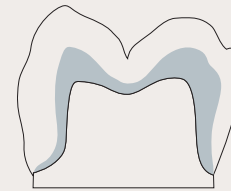
If the listed framework design criteria and minimum thicknesses are not adhered to, this can lead to clinical failure such as cracks, flaking and fracture of the restoration.

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To achieve a consistent layer thickness of the veneering material, the framework should always be designed during the layering technique so that it supports form and cusps.



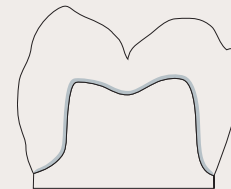
Anterior tooth supported



Posterior tooth supported



Anterior tooth not supported



Posterior tooth not supported

TIPS ON WORKING WITH ZIRCONIUM DIOXIDE

Firing guide

In case of large of budge restorations, the bulky parts should be fired in a separate dentine firing reduced as dentine core with pure dentine material – with increased temperature and reduced raise of temperature – in order to prevent under-firing of these parts due to the poor heat conductivity of zirconium dioxide.

Dentine firing with six-minute linear long-term cooling

Dentine firing for large-span restorations with prolonged pre-drying time, reduced raise of temperature and six-minute linear long-term cooling, for restoration sizes above four units.

Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Long-term cooling	Appearance
Dentine firing for bulky bridge units	450 °C	6 min.	40 °C/min.	+	820 °C	1 min.	6 min.	Shiny
Dentine firing with long-term cooling	450 °C	6 min.	45 °C/min.	+	810 °C	1 min.	6 min.	Shiny
Dentine firing for more than four units	450 °C	8-10 min.	40 °C/min.	+	810 °C	1 min.	6 min.	Shiny

General hints on working with zirconium dioxide ceramics

- Seal the dies and the model with varnish to prevent absorption of liquid.
- Isolate the dies, adjacent and opposing teeth.
- Mixed ceramics should display uniform moisture penetration (moisturising system Aqualine from Creation) so that homogeneous application is possible.
- Applied layering must be kept moist – avoid excessive drying out and avoid moist layer touch-up.
- Do not re-wet dried out materials with modelling fluid. Only use distilled water or Aqualine Liquid.

CONDITIONING OF DIFFERENT ZIRCONIUM DIOXIDE FRAMEWORKS

White zirconium dioxide

Conditioning with CreaColor In Nova Neo

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White zirconium dioxide framework.



Glaze-applied In Nova Neo Modifier to give the white zirconium dioxide chroma and fluorescence.



Fired In Nova Neo Modifier produces a retentive surface for the other ceramics to be applied.

Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Appearance
In Nova Neo as Frameshade	500 °C	6 min.	45 °C/min.	+	900 °C	1 min.	Shiny

CONDITIONING OF DIFFERENT ZIRCONIUM DIOXIDE FRAMEWORKS

White zirconium dioxide

Conditioning with Creation Frame Shade Neutral (FS NT)



White zirconium dioxide framework.



Application of premixed thixotropic fluorescent FS NT (dilutable with the UF Liquid) in a thin layer.



After firing the restoration is coated with a thin fluorescent layer of about 0.2 to 0.3mm.

Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Appearance
FS NT	500 °C	6 min.	45 °C/min.	+	860 °C	1 min.	Shiny

CONDITIONING OF DIFFERENT ZIRCONIUM DIOXIDE FRAMEWORKS

White zirconium dioxide

Conditioning with FS NT and characterisation with CreaColor Make up Neo

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Now blast the fired FS NT with 50 μm Al_2O_3 at 1 bar pressure – for a retentive surface to allow precise colour application of the CreaColor Make up Neo stains.



Framework characterised with Make up Neo stains.



Framework characterised with Make up Neo stains in fired condition.

Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Appearance
FS NT / Make up Neo	500°C	2 min.	45°C/min.	+	850°C	1 min.	Shiny

CONDITIONING OF DIFFERENT ZIRCONIUM DIOXIDE FRAMEWORKS

Coloured classic or translucent zirconium dioxide

Conditioning with FS NT



Coloured translucent zirconium dioxide framework.



Application of premixed thixotropic fluorescent FS NT in a thin layer.



After firing the restoration is coated with a thin fluorescent layer of about 0.2 to 0.3 mm.

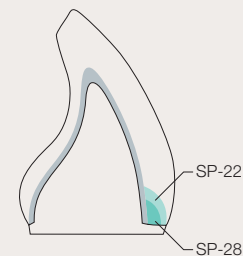
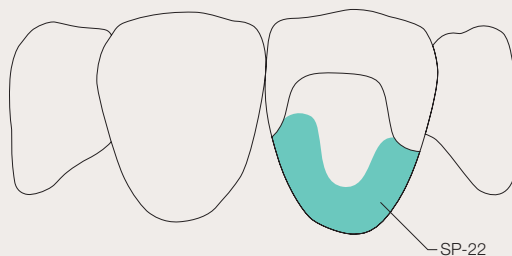
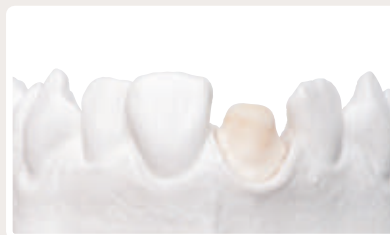
Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Appearance
FS NT	500 °C	6 min.	45 °C/min.	+	860 °C	1 min.	Shiny

SHOULDER FIRING

The very thinly sealed die is isolated with Creapen in the area of the shoulder. The easily accessible framework cap is fitted onto the die.

Application of the opacious shoulder SP-28 material in the framework/shoulder transition area to stabilise the value in the neck area.

The shoulder is covered up to the preparation border with the shoulder material chosen for the tooth colour (SP-21 – 25). After gentle initial drying with a hair-dryer or in front of the open furnace, the cap can effortlessly be removed from the die.



Layering example: Shade A2

Materials used:

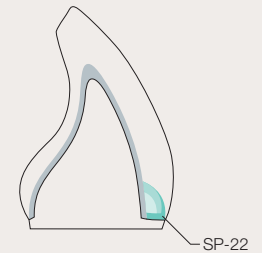
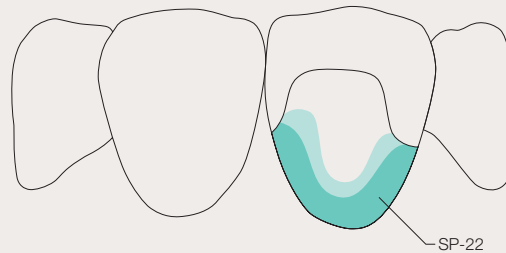
- Opaque Shoulder SP-28
- Translucent Shoulder SP-22



Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Appearance
Shoulder firing	450°C	4 min.	45°C/min.	+	860°C	1 min.	Slightly shiny

SHOULDER FIRING - CORRECTION

Repeated isolation with Creapen. The ceramic contracted due to firing is corrected with the translucent shoulder porcelain chosen for the tooth colour (SP-21 to -25).



Layering example: Shade A2

Material used:
- Translucent Shoulder SP-22



Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Appearance
Shoulder firing correction	450 °C	4 min.	45 °C/min.	+	860 °C	1 min.	Slightly shiny

DENTINE FIRING

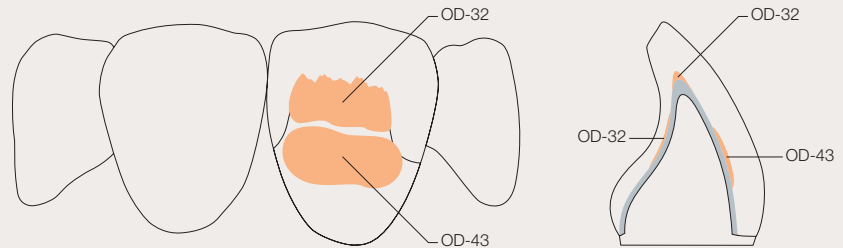
Application of opaque dentines and approximal dentines

Opaque Dentine Intensive: OD-32, -37, -41, -43 and -44. Use of OD-43 in middle crown area to increase the value.

The opaque dentines vitrify slightly more strongly and are hence more homogeneous from the perspective of periodontal hygiene.

At the base of the pontics, this is extremely important and additionally helps to stabilise value in the cervical third.

To prevent shadowing of the build-up in the interdental area, the chromatic approximal dentines AD-1 and AD-2 are applied interproximally.



Layering example: Shade A2

Materials used:

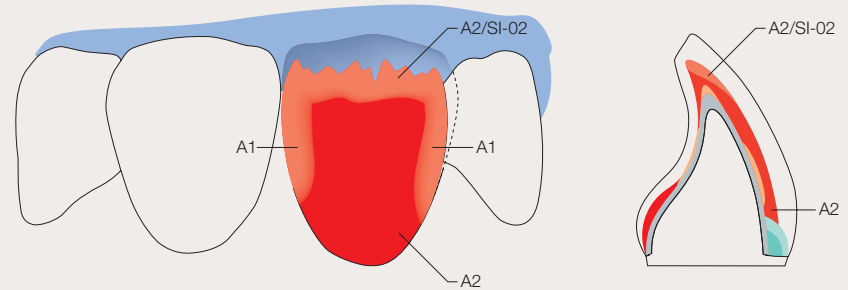
- Opaque Dentine OD-32
- Opaque Dentine OD-43



DENTINE FIRING

Application of dentine materials

After the anatomical form has been correctly shaped, the dentine build-up is reduced by the incisal parts. This creates space for the “incisal plate” which comprises Enamel and Transpa materials. In the process, an irregular dentine structure should be suggested in order to refract the light irregularly.



Layering example: Shade A2

Materials used:

- Dentine A2
- Dentine A1
- Dentine A2 / Enamel Intensive SI-02 Ratio (8:2)



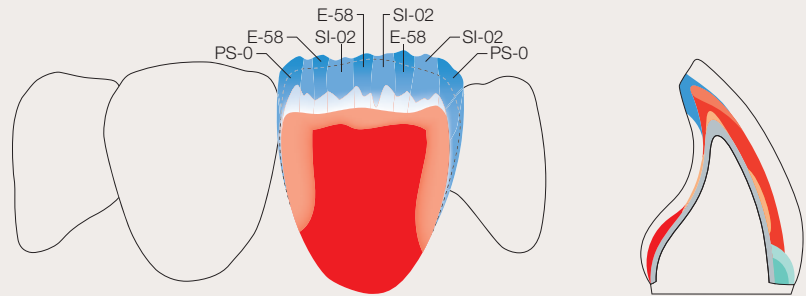
DENTINE FIRING

Layering the incisal shield:

The dentine layering is individually complemented by Enamel and Transpa materials in its incisal-palatal direction. The first stage is to build up the distal and/or mesial edges with pure Enamel porcelain.

The middle incisal area is alternately supplemented with the following materials: Enamel (E-57 – 60), Opal Enamel (SI-02 – 06), Pearl Enamel (PS-0 – 3), Opal Transpa (NT, OT), Clear (CL-O, UC) or TI (TI-1 – 5).

Over-contouring of the incisal length of the restoration is necessary to achieve compensation of shrinkage.



Layering example: Shade A2

Materials used:

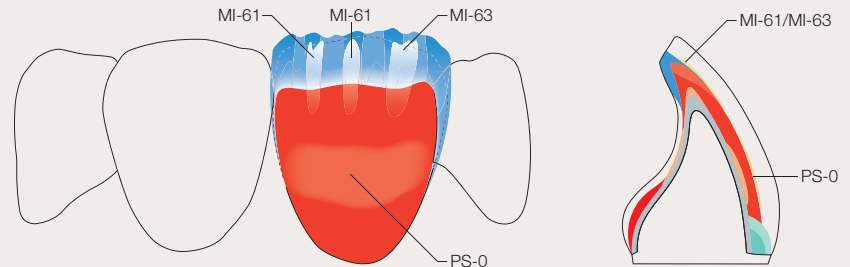
- Enamel E-58
- Enamel Intensive SI-02
- Pearl Enamel PS-0



DENTINE FIRING

Layering of internal effects:

Onto the labial surface, the iridescent Make In materials (MI-61 – 65) at an appropriate intensity depending on the required characteristics are thinly washed into wet material in the incisal third. Lifelike mamelons or effects can thus be reproduced.



Layering example: Shade A2

Materials used:

- Make In MI-61
- Make In MI-63
- Pearl Enamel PS-0



DENTINE FIRING

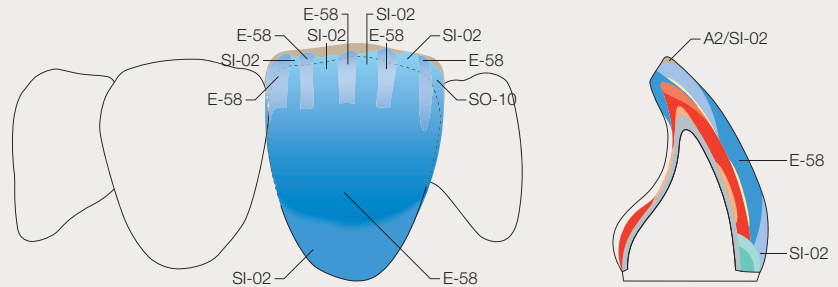
Layering of the labial enamel parts and the incisal edge

The labial surface is completed with Enamels (E-58 – 60) in a classic layering technique.

For individual layering, the chromatic Opal Enamels (SI-02 – 06, SO-10 – 11), Pearl Enamels (PS-0 – 3), Opal or Transpa Neutral porcelains (NT, OT), Clear or Ultraclear porcelains (CL-O, UC) and the Transpa Incisal porcelains (TI-1 – 5) can be used, depending on the desired effect. In the cervical third, the high-fluorescent Neck Transpa porcelains (HT-51 – 56) can be used for individual layering.

The incisal edge is achieved with an Enamel / Dentine mixture.

To allow for firing shrinkage, the layering is also over-contoured labially and incisally.



Layering example: Shade A2

Materials used:

- Enamel E-58
- Enamel Intensive SI-02
- Opal Enamel SO-10
- Dentine A2 / Enamel Intensive SI-02 Ratio (1:1)

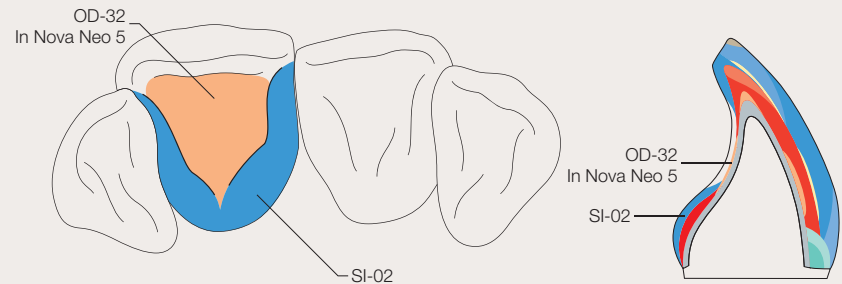


DENTINE FIRING

Layering of the palatal surface

The palatal surface is covered, usually with a darker OD (e.g. OD-41, OD-32, OD-37) or with an OD mixture modified using CreaColor In Nova Neo, tapered thinly towards the incisal edge. The tubercle area and the substructure of the marginal ridges are built up with Dentine. Dark and discoloured areas in the palatal fossa can be treated with a mixture of Dentine and In Nova Neo (Universal Modifier).

The palatal surface is then completed with Enamel, Transpa and Neck Transpa porcelains.



Layering example: Shade A2

Materials used:

- Opaque Dentine OD-32 / In Nova Neo 5
- Enamel Intensive SI-02

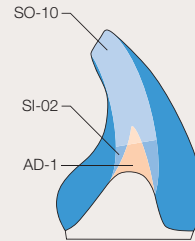
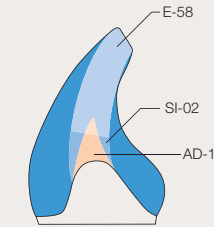


DENTINE FIRING

Layer of interapproximal areas

After lifting off the model, a triangle is removed in the cervical-interapproximal area and filled with Approximal Dentine (AD-1, AD-2), then covered with the desired Dentine shade. As a result, increased light and colour stability is achieved. The contact points are supplemented with the appropriate Dentine and Enamel porcelains.

For bridge restorations, the interdental spaces are separated with a sharp instrument (razor blade, thin scalpel, etc.).



Layering example: Shade A2

Materials used:

- Approximal Dentine AD-1
- Dentine A2
- Opal Enamel SO-10
- Enamel Intensive SI-02



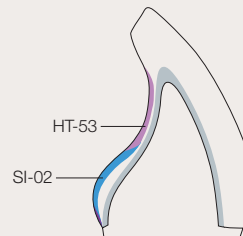
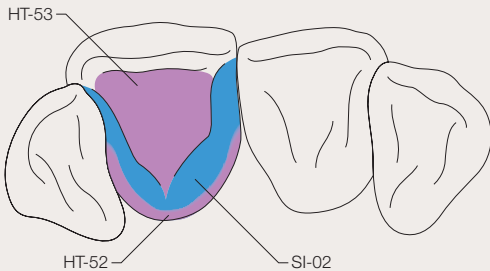
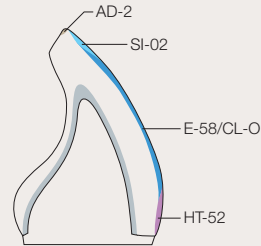
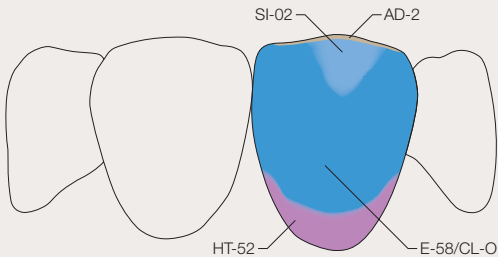
DENTINE FIRING



Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Appearance
Dentine firing	450 °C	6 min.	45 °C/min.	+	810 °C	1 min.	Shiny

CORRECTION FIRING

Before the correction firing the crowns are finished and cleaned. The second contour firing is a pure correction firing. Only small contour corrections are made with Enamel, Transpa and Neck porcelains.



Layering example: Shade A2

Materials used:

- Enamel E-58 / Clear CL-O; Ratio (1:1)
- Enamel Intensive SI-02
- Approximal Dentine AD-2
- Neck Transpa HT-52
- Neck Transpa HT-53



CORRECTION FIRING

Firing is performed at 800 °C under vacuum.

After reaching the final temperature the firing chamber is again flooded.

Holding time: 1 minute. If the firing cycle is correct, the ceramic also appears slightly shiny this time. Usually only minor contour corrections are required.



Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Appearance
Correction firing	450 °C	6 min.	45 °C/min.	+	800 °C	1 min.	Shiny

SURFACE TEXTURING

However, the natural surface texture of the restoration is also important. The aim is aesthetic harmony with the adjacent teeth, which can be achieved by using conventional diamonds, stones and carbide tungsten tips.



GLAZE FIRING

Discolourations on the tooth surface can be reproduced in a lifelike way with CreaColor Make up Neo. The surface of the furnace-glazed crown is mechanically finished. Depending on the gloss level of the texture, the surface is adapted to the situation in the mouth using rubber polishers, emery powder, felt wheel, pumice powder and polishing materials.

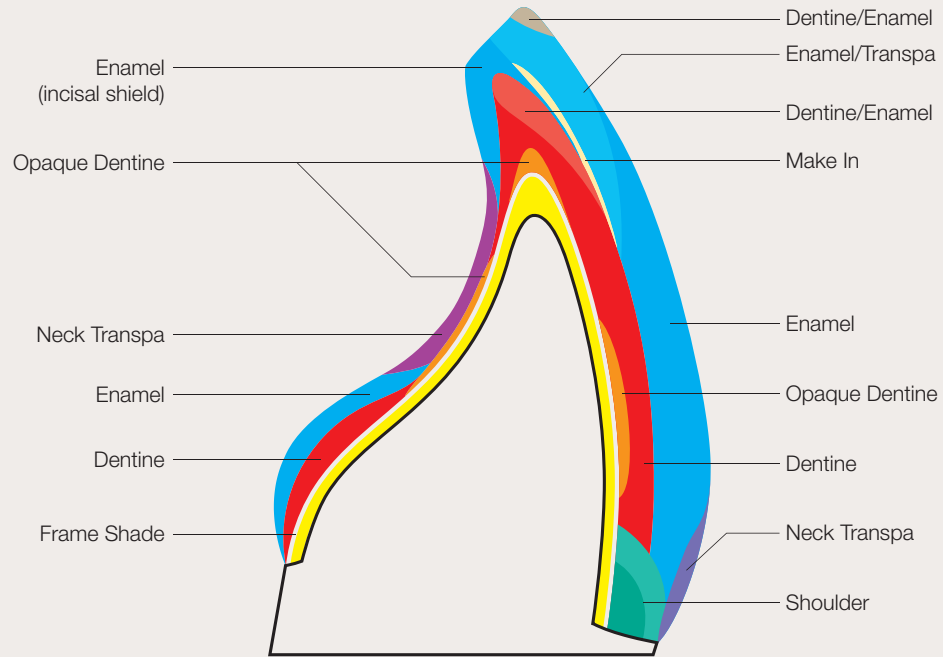
When using glazing powder, this is mixed with the UF Liquid. The Make up Neo stains and the Make up Neo fluorescent glaze are already pre-mixed ready for use.

The Creation porcelains are characterised by the correct fluorescence level, which allows a natural, harmonious transition to the rest of the dentition even under extreme light conditions.

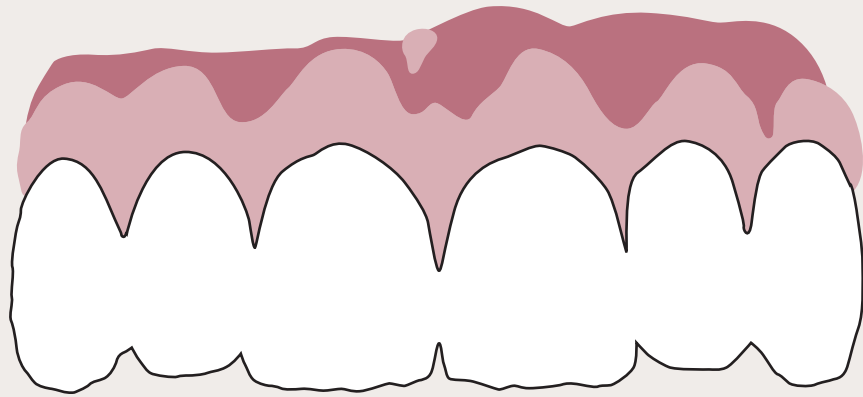
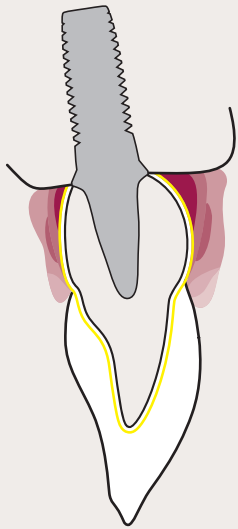


Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Appearance
Glaze firing	480 °C	2 min.	45 °C/min.	-	820 °C	-	Shiny
Glaze firing with glaze	480 °C	2 min.	45 °C/min.	-	790 °C	1 min.	Shiny
Glaze and colour firing Make up Neo	480 °C	2 min.	45 °C/min.	-	790 °C	1 min.	Shiny

LAYERING DIAGRAM CREATION ZI-F

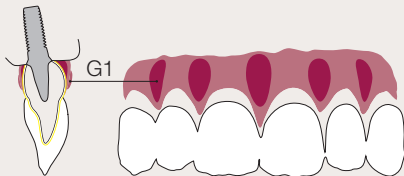
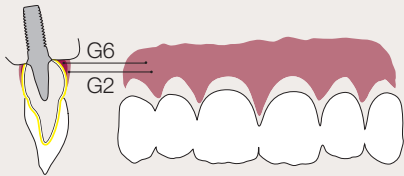
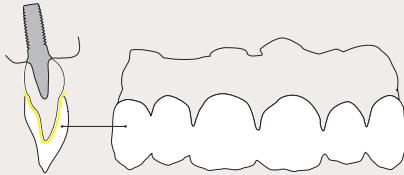
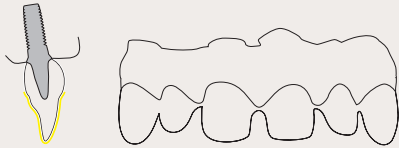


CREATION ZI-F GINGIVA



CREATION ZI-F GINGIVA

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APPLICATION OF FRAME SHADE NT AND FRAME SHADE FOR THE RELEVANT COLOUR

1st LAYERING

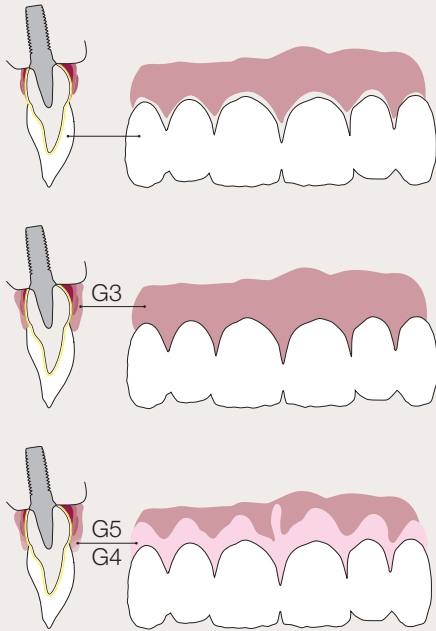
Layering the white aesthetics.

Layering the pink aesthetics.

With G2-dark pink the complete, still exposed framework is then covered. For thick layers, the porcelain can be built up from within using G6-dark pink opaque and the colour stabilised as a result of the higher opacity. It is important to make sure the tooth-coloured and gingiva-coloured porcelains do not touch so that specific positioning of the fired porcelains can be achieved.

Washing G1-purple mesially and distally to the alveolar ridges.

CREATION ZI-F GINGIVA



DENTINE FIRING

The dentine firing is performed at 810 °C under vacuum. Reliable proof of a correct firing cycle can only be gained by visual inspection post-firing.

The appearance should be slightly shiny. If so, the firing cycle was perfect.

2nd LAYERING

Correction of white aesthetics.

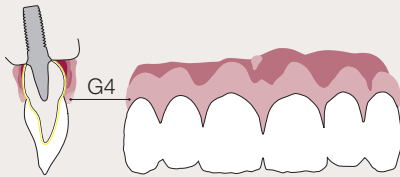
Completing the pink aesthetics.

Completely covering the pink aesthetics with a thin layer of G3-light pink.

Individual characterisation of gingival margin, labial and buccal frenulae with G5-rose and for lighter areas with G4-flamingo.

CREATION ZI-F GINGIVA

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1st CORRECTION FIRING

The correction firing is performed at 800 °C under vacuum.

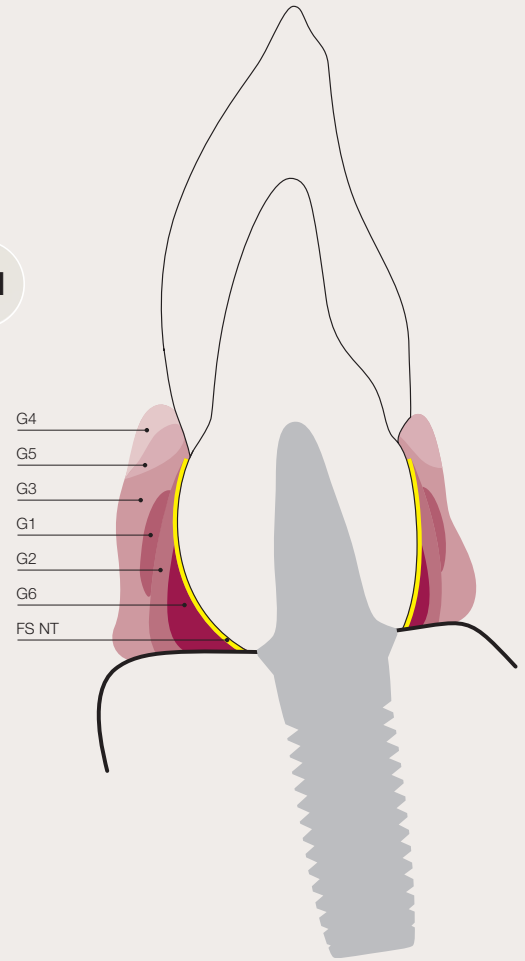
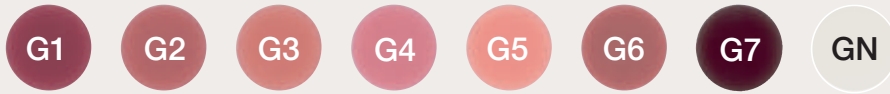
2nd CORRECTION FIRING

The second correction firing is performed at 800 °C under vacuum. Final corrections to the tooth form and corrections to the gingiva are possible with G4-flamingo.

GLAZE FIRING

Discolourations on the tooth surface or in the gingiva can be reproduced in a lifelike way with CreaColor Make up Neo.

CREATION ZI-F GINGIVA



CREATION ZI-F – COLOUR CHART

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A1	A2	A3	A3,5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4

DENTINE

OD-32 havanna	OD-37 curry	OD-41 orange	OD-43 ivory	OD-44 cuba	57	58	59	60

OPAQUE DENTINE

ENAMEL

CL-O clear	UC window	NT neutral	OT opal	TI-01 blue	TI-02 white	TI-03 pink	TI-04 yellow	TI-05 grey

CLEAR

TRANSPA

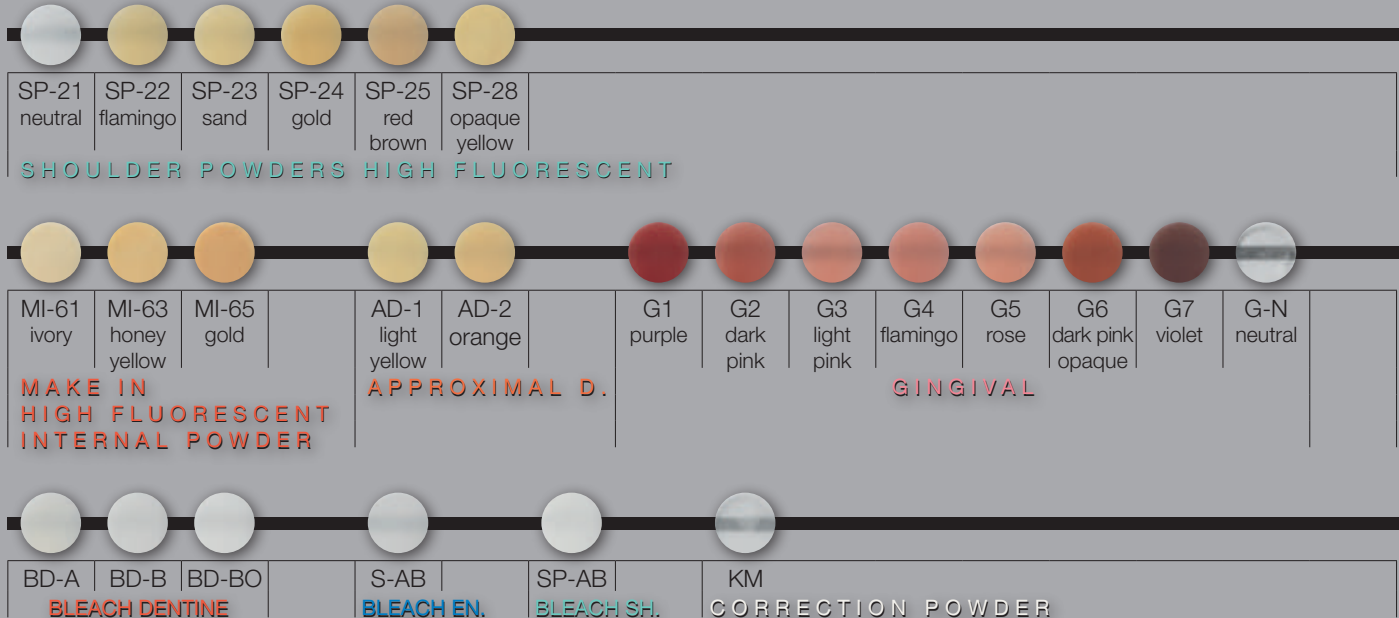
PS-0 white	PS-3 orange	SI-02 medium yellow	SI-04 light orange	SI-06 heavy orange	SO-10 blue	SO-11 orange	HT-51 irides- cent	HT-52 khaki	HT-53 sand	HT-54 honey	HT-56 ocher

PEARL ENAMEL

EFFECT ENAMEL

NECK TRANSPA HIGH FLUORESCENT

CREATION ZI-F – COLOUR CHART



CREACOLOR – COLOUR CHART

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In Nova Neo is a fluorescent universal modifier for ceramic materials which is also burnt in the respective Dentine firings. Some exceptions to this are the Opaquer materials and the Opaquer Modifier. In Nova Neo has, thanks to its fluorescence, the property of effectively and harmoniously transporting the tooth shades. In Nova Neo is very rigorous in shade rendition. It only requires small amounts to modify the respective materials. In Nova Neo may not be applied to the surface of a ceramic restoration at any time.

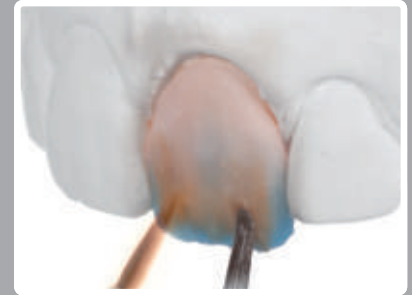


Fig. 1 - 4, Sascha Hein

IN NOVA NEO

Indication: modifiers and characteristics

12 fluorescent modifiers

1 In Nova Fluid

											
INN-1 melone	INN-2 rose	INN-3 yellow	INN-4 red brown	INN-5 brown	INN-6 olive	INN-7 grey	INN-8 blue	INN-9 white	INN-10 mais	INN-CRL Crackliner	INN-IL Illusion

Make up Neo stains characterised by glaze. They may be added to the ceramic materials in small amounts for modification, in order to provide them with a higher colour saturation without adversely affecting the brilliance of the materials.



MAKE UP NEO

Shades, Characteristics of Make up Neo

- 17 fluorescent transparent colours (MUN-F)
- 1 fluorescent glaze (GL-F)
- 1 Colour fluid
- 1 Colour reconditioner (for refreshing thickened colours)

									
MUN-F1 white	MUN-F2 eggshell	MUN-F3 lemon yellow	MUN-F4 mandarin	MUN-F5 flamingo	MUN-F6 apricot	MUN-F7 light brown	MUN-F8 medium brown	MUN-F9 olive	MUN-F10 red
									
MUN-F11 blue	MUN-F12 grey	MUN-F13 deep blue	MUN-FA stain A	MUN-FB stain B	MUN-FC stain C	MUN-FD stain D	MUN-GL-F Glaze		

CREATION ZI-F – FIRING CHART

Firing	Preheating temperature	Drying time	Raise of temperature	V	Final temperature	Holding time	Long-term cooling	Appearance
FS	450 °C	2 min.	55 °C/min.	+	900 °C	1 min.		Slightly shiny
FS NT	450 °C	6 min.	45 °C/min.	+	860 °C	1 min.		Slightly shiny
FS NT & Make up Neo	450 °C	2 min.	45 °C/min.	+	790 °C	1 min.		Slightly Shiny
In Nova Neo as Frame Shade	450 °C	6 min.	45 °C/min.	+	900 °C	1 min.		Slightly Shiny
1st and 2nd Shoulder firing	450 °C	4 min.	45 °C/min.	+	860 °C	1 min.		Slightly shiny
Dentine firing	450 °C	6 min.	45 °C/min.	+	810 °C	1 min.		Shiny
Correction firing	450 °C	6 min.	45 °C/min.	+	800 °C	1 min.		Shiny
Glaze firing	450 °C	2 min.	45 °C/min.	-	820 °C	-		Shiny
Glaze firing with glaze	450 °C	2 min.	45 °C/min.	-	790 °C	1 min.		Shiny
Glaze and colour firing (Make up Neo)	450 °C	2 min.	45 °C/min.	-	790 °C	1 min.		Shiny
Firing Correction material	450 °C	4 min.	45 °C/min.	+	690 °C	1 min.		Shiny
Dentine firing for bulky bridge units	450 °C	6 min.	40 °C/min.	+	820 °C	1 min.	6 min.	Shiny
Dentine firing with long-term cooling	450 °C	6 min.	45 °C/min.	+	810 °C	1 min.	6 min.	Shiny
Dentine firing for more than four units	450 °C	8-10 min.	40 °C/min.	+	810 °C	1 min.	6 min.	Shiny

The above firing parameters are guide values which must always be adapted to the furnace being used and the situation of the furnace. Getting the right firing result is what matters.

PHYSICAL PROPERTIES

Property	Unit	Value	Standard
Coefficient of thermal expansion (25 °C - 500 °C)	10^{-6} xK^{-1}	2 Firings: $9,5 \pm 0,3$ 4 Firings: $9,5 \pm 0,3$	
Glass transformation point	°C	550 ± 10	
Solubility	$\mu\text{g}/\text{cm}^2$	16	max. 100
Density	g/cm^3	2.43	
Flexural strength	MPa (Nmm ²)	90	min. 50
Mean particle size	D 50 %	60	

The stated technical and physical values relate to samples prepared in-house and the measuring instruments located in-house.



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