

# Instructions for use

*PFM 790*

estetic ceram ag

CE 0483

issued March 2021

- 1 -

# Instructions for use layering ceramic *PFM 790*

Acc. VITA®\* classical shade guide colors

---

## Material and Indication, Contraindication

---

### Material and indication:

The esthetic ceram layering ceramic *PFM 790* is a leucite glass ceramic and is colored according to the Vita® classical shade guide A1-D4. The *PFM 790* layering ceramic is only intended for dental applications and for use by trained professionals. A matching transparency and fluorescence allows the reconstruction of natural looking teeth in the form of metal ceramic crowns or bridges on conventional alloys with a thermal expansion of  $14 - 15 \times 10^{-6} \times K^{-1}$  (25 - 500 °C).

### Contraindications:

- Combinations with ceramic materials outside of esthetic ceram's described range of product systems and/or material from another manufacturer.
- Use of non-approved framework materials.
- Sharp edges and corners on the framework or non-anatomically reduced frame shapes.
- Dental ceramic and complete ceramic restorations made of glass ceramics are not recommended for patients with bruxism or parafunction.

---

## Fabrication of Metal Framework

---

The fabrication of metal framework (casting, processing, cleaning/oxidation) must be performed according to the manufacturer's instructions. The framework must have a reduced anatomical shape and should provide enough space for an even coating of layering ceramic < 2 mm. Sharp edges and corners need to be rounded off.

---

## *PFM 790* Opaque-Bake

---

The opaques are made in a modern paste form or as powders.

The paste has a ready-to-use consistency and can be applied as a covering layer that doesn't flow. The canned material allows the original consistency to be recreated, simply by mixing it, in case the opaque separates after prolonged storage.

Please pay attention with all pastes: Water reacts with the paste like an extreme thinning agent, therefore after washing the brush with water please dry it before applying opaque paste to it. Wet the brush before use with opaque liquid only! Apply the first opaque layer onto the clean, dry framework with a flat brush, so that optimum 70% coverage of the metal has been reached (do not suction!).

### 1st Bake powder opaque

After the opaque application, the crown or bridge is dried under the open furnace at a starting temperature of 400 °C for 1-2 minutes. Subsequently the furnace is closed with a 6 minute drying time and heated at a rate of 80 K/min with vacuum (vacuum starting at 450 °C) to 950 °C. Hold time: 2 minute (without vacuum).

### 2nd Bake powder opaque

Clean the framework and the layering with steam or water and brush thoroughly before another porcelain application. With the application of the second opaque layer the metal frame work is completely covered. Continue with the same procedure as in the first powder opaque bake (950 °C).

### **1st Bake paste opaque**

After the opaque application, the crown or bridge is dried under the open furnace at a starting temperature of 400 °C for 1-2 minutes. Subsequently the furnace is closed with a 6 minute drying time and heated at a rate of 80 K/min with vacuum (vacuum starting at 450 °C) to 950 °C. Hold time: 2 minute (without vacuum°).

### **2nd Bake paste opaque**

Clean the framework and the layering with steam or water and brush thoroughly before another porcelain application. With the application of the second opaque layer the metal frame work is completely covered. Continue with the same procedure as in the first powder opaque bake (950 °C).

---

## **PFM 790 Margin-Bake**

---

Apply a thin layer of Margin separator liquid to the shoulder of the die. Mix the margin powder with modelling liquid 2 to a creamy consistency. Apply margin shoulder ceramic mix in small portions and condense by tapping, suction any excess liquid and dry well.

### **1st Bake**

After the margin application, the crown or bridge is placed on a firing tray at a starting temperature of 400 °C. Subsequently the furnace is closed with a 4 minute closing time and then heated at a rate of 55 K/min with vacuum (vacuum starting at 450 °C) to 880 °C (bake temperature). Hold time: 1 minute (without vacuum). After the first bake, place the crown on the die and remove excess materials. A second margin application follows where necessary to optimize the fit.

### **2nd Bake**

See first Bake (870 °C)

---

## **PFM 790 Dentin-Bake**

---

Mix ceramic powder (Dentin and/or Incisal) with modelling liquid to a creamy consistency. Apply Dentin or Incisal ceramic in small portions to the cervical and interdental area and compact by light vibration. Then more Dentin or Incisal is applied according to the tooth layering.

### **1st Bake**

After the Dentin application the crown is placed on a firing tray at a starting temperature of 400 °C. Subsequently the furnace is closed with a 4 minute closing time and then heated at 55 K/min with vacuum (vacuum starting at 450 °C) to 820 °C (bake temperature). Hold time: 1 minute (without vacuum). After the first Dentin/Incisal firing is complete, trim the crown or bridge and clean. Next, apply a second layer of Dentin and Incisal for the second Dentin firing.

### **2nd Bake**

Same procedure as for the first Dentin firing, except with a firing temperature of 810 °C.

Any further Dentin firings should be carried out at 800 °C.

---

## **Glaze finish/Glaze-Bake**

---

After completely finishing the surface with a diamond instrument, thoroughly clean the crown or bridge.

Apply the glaze paste or glaze powder and liquid mix of your choice in thin layers. For the color characterization, all conventional **Stains LFU** and **Glaze LFU** can be applied and fired.

## Bake

After the glaze application, place the crown on a firing tray and use the firing program of the **stains LFU** and **glaze LFU** system.

## Glaze Bake

Place the crown on a firing tray at a starting temperature of 400 °C. Subsequently close the furnace with a 4 minute closing time and then heat at a rate of 45K/min without vacuum to 710 °C (bake temperature). Hold time: 1 minute (without vacuum).

## Natural Glaze Bake without glaze

Place the crown on a firing tray at a starting temperature of 400 °C. Subsequently close the furnace with a 4 minute closing time and then heat at a rate of 55 K/min with vacuum to 800 °C (bake temperature). Hold time: 1 minute (without vacuum).

---

## Correction-Bake

---

If small additions (approximal contacts, apical pontic) are necessary to the restoration after complete finishing, **LFC 710** as correction powder in dentine or incisal shading may be applied without altering the result of the layering. Before application clean the crown or bridge.

Mix **LFC 710** as correction powder with modelling liquid to a creamy consistency. Apply small portion of porcelain to the desired area of the restoration.

After the **LFC 710** correction powder application place the crown on a firing tray at a starting temperature of 400 °C. Subsequently the furnace is closed with a 4 minute closing time and then heated at 45 K/min with vacuum (vacuum starting at 450 °C) to 710 °C (bake temperature). Hold time: 1 minute (without vacuum).

---

## Combinations and Firing table

---

Note: The given firing temperatures were determined in a Zubler Vario 300 dental furnace and are approximate values. For other furnace types, corrections to the firing temperatures may be necessary. Firing data is in the firing table and possible material combinations are mentioned in the combination table below.

### COMBINATIONS TABLE

	A					B				C				D		
<b>PFM 790</b> Opaque	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4
<b>PFM 790</b> Margin	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4
<b>PFM 790</b> Opaque Dentine	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4
<b>PFM 790</b> Dentine	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4
<b>PFM 790</b> Incisal	1	2	2	4	4	1	2	3	4	2	2	3	4	1	2	3

### FIRING SCHEDULE

	Start-up Temp.	Closing Time	Vacuum Start.	Heat Rate	1st Bake	2nd Bake	Hold Time
	°C	min	°C	K/min	°C	°C	min
<b>PFM 790 Opaque</b>	400	6	450	80	950	950	2
<b>PFM 790</b> Margin	400	4	450	55	880	870	1
<b>PFM 790</b> Dentin/Incisal	400	4	450	55	820	810	1
<b>PFM 790</b> Natural glaze	400	4	450	55	800	---	1
<b>LFU</b> Glaze/Stains	400	4	no	45	710	---	1
<b>LFC 710</b> Correction	400	4	450	45	710	---	1

\*VITA is a registered trade mark of the VITA- Zahnfabrik, Bad Säckingen

## Technical data

Materials classification	
Material:	Silicate glass ceramic
Chemical composition:	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, CaO, B <sub>2</sub> O <sub>3</sub>

Classification acc DIN EN ISO 6872:2019			
Type:	1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/>	Class:	1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> a <input type="checkbox"/> b <input checked="" type="checkbox"/> c <input type="checkbox"/>

Physical -chemical properties acc. to DIN EN ISO 6872/ DIN EN ISO 10993-5			
Property	Specification Opaque	Specification Margin	Specification Dentin, Insical (25 - 450 °C) [ $\cdot 10^{-6} \cdot K^{-1} \pm 0.5$ ]
Coefficient of thermal expansion (25 - 500 °C) [ $\cdot 10^{-6} \cdot K^{-1} \pm 0.5$ ]	2 x: 13.0 4 x: 13.0	2 x: 13.5 4 x: 13.5	2 x: 13.0 4 x: 13.0
Glasstransformationtemperature Tg [°C ± 20]	2 x: 550 4 x: 550	2 x: 560 4 x: 560	2 x: 550 4 x: 550
Bending strength [MPa]	≥ 50	≥ 50	≥ 50
Solubility [µg/cm <sup>2</sup> ]	< 100	< 100	< 100

---

## 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 and pressing 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!!!

Warning for Investment Material:

The investment material contains quartz powder. AVOID inhaling dust, wear a protective mask. Read the warning on the investment packaging.

Recommended storage temperature:

12-38 °C and normal air humidity 40-60%.

Store in closed containers.

Do not fill back powder mixed with liquid to the container.

Use clean and dry spoon, spatula or brush to take out powder from the containers.

---

## Explanation of symbols on the product labels

---



Manufacturer



Date of manufacture YYYY-MM-DD



Medical Device



Batch code



Reference number



Caution, consult instruction for use