

# VINTAGE

## VINTAGE AL BOND PORCELAIN SYSTEM



## INSTRUCTION FOR USE





To use this product correctly, please read the "Directions for use" beforehand and keep them in a convenient place where you can read them if necessary.

VINTAGE AL was developed as a dental veneering porcelain for use with Alumina-core materials such as the Procera<sup>(\*)</sup> system.

Opal porcelain, a development based on SHOFU's many years of experience, enables life-like restorations to be fabricated with ease. The recently developed Cervical Trans powder is fired at a lower temperature and reproduces deeper cervical shades with smoother surfaces for easier cleaning and higher biocompatibility with gum tissue.

(\*) Procera<sup>®</sup> is a registered trademark of Nobel Biocare AB, Sweden.

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## 1 Notes

### Notes

- ① Use of eye-protective glasses is recommended for contouring work.
- ② Use of dust extractor or mask is recommended for contouring work.
- ③ VINTAGE AL must only be used for the intended purpose.
- ④ VINTAGE AL must only be used by dental professionals.

### Precaution

- ① If allergic reactions occur such as eruption or skin inflammation while using this product, discontinue use immediately and seek medical advice.

## 2 System components

### 2-1. Reproduction of life-like shades

- (1) Restorations with enhanced aesthetics can be fabricated thanks to the wide ranging shade system such as Cervical Trans and/or Opal Porcelain.
- (2) More life-like enamel shades can be reproduced using Opal Porcelain with the simplified 2-layer technique.
- (3) Opaque Liner enables more stable shades to be reproduced, regardless of the die shade.

### 2-2. Fluorescence resembling that of natural teeth

- (1) Fluorescence resembling that of natural teeth - Vintage AL is uranium-free and especially biocompatible.
- (2) Margin and Cervical Trans porcelains are especially fluorescent for creating restorations with life-like cervical areas.

## 2-3. System and shades

SYSTEM	SHADES
Opaque Liner (23 shades) 5g	A1O, A2O, A3O, A3.5O, A4O, rootAO B1O, B2O, B3O, B4O, C1O, C2O, C3O, C4O D2O, D3O, D4O, W1O, W2O, W3O OM-Y, OM-LP, OM-DP
Opaque Dentin (9 shades) 15g and 50g	OD-N, OD-A3, OD-rootA, OD-B2, OD-B4, OD-C2, OD-C4, OD-D3, OD-W1
Margin (11 shades) 15g	CLM, NM, A3M, rootAM, B2M, B4M, C2M, C4M, D3M, LPM, W1M
Body (20 shades) 15g and 50g	A1B, A2B, A3B, A3.5B, A4B, rootAB B1B, B2B, B3B, B4B, C1B, C2B, C3B, C4B, D2B, D3B, D4B, W1B, W2B, W3B
Opal (5 shades) 15g and 50g	Opal 56, Opal 57, Opal 58, Opal 59, Opal 60
Opal Effect (8 shades) 15g and 50g	Opal T, Opal SL, Opal WE, Opal MI, Opal OC, Opal AM-R, Opal AM-Y, Opal AM-V
Enamel Effect (5 shades) 15g and 50g	BT, OT, PT, GT, T-Glass
Cervical (4 shades) 15g and 50g	AC, BC, CC, DC
Cervical Trans (5 shades) 15g and 50g	CT-CL, CT-W, CT-A, CT-B, CT-R
Color Effect (8 shades) 15g	MP, MY, Miv, RED, Y, O, W
Gum (2 shades) 15g	Gum-LP, Gum-DP
Correction (3 shades) 15g	ADD-ON B, ADD-ON T, CPM Fine

## 2-4. Components

- ① **Opaque Liner (23 shades, 5g each)**  
 Opaque Liner is used to create the base shade.  
 Apply on the alumina coping to produce a base for each shade.  
 Opaque Liner is a paste which is easily applied in thinner layers.  
 It masks discolored abutment teeth post and can be applied as a base shade for the alumina core frame. 3 modifier shades are available for reproducing a wider range of shades. The layer thickness and viscosity are easily adjusted as this material is supplied in paste form.
  - OM-Y : Yellowish shade
  - OM-LP : Light pinkish shade
  - OM-DP : Deep pinkish shade
  
- ② **Opaque Dentin (9 shades, 15g and 50g each)**  
 This porcelain has the same shade as body porcelain, but is more opacious. It is used in lingual areas or the gingival aspects of anterior bridge pontics where only limited space is available for the porcelain.
  - OD-N : Diluent color porcelain for mixing with basic Opaque Dentin shades
  - OD-W1 : This porcelain is used for Whitening shades
  
- ③ **Margin (11 shades, 15g each)**  
 This porcelain has the same shade as body porcelain, but has a higher firing temperature and increased fluorescence. It is used for optimizing the marginal areas of alumina copings or building up porcelain margins.
  - CLM : Transparent shade - also for mixing with basic Margin porcelain shades for adjusting the transparency
  - NM : Same shade as the alumina coping - used for correcting marginal areas and diluting Margin porcelains
  - LPM : Light pinkish shade for mixing with basic Margin porcelain shade
  - W1M : This porcelain is used for Whitening shades
  
- ④ **Body (20 shades, 15g and 50g each)**  
 This porcelain is used to reproduce dentin shades.
  
- ⑤ **Opal (5 shades, 15g and 50g each)**  
 This enamel porcelain transmits light similar to natural enamel (opal effect). Applying it in two layers, together with Body porcelain, enables life-like enamel shades to be reproduced.

## 2-4. Components

- ⑥ **Opal Effect (8 shades, 15g and 50g each)**

This enamel effect porcelain transmits light similar to natural enamel (opalescence).

  - **OPAL T :**  
Regular opalescent translucent porcelain
  - **OPAL SL (Superlucent) :**  
A slightly bluish porcelain with higher opalescent translucency
  - **OPAL WE (White Enamel) :**  
A slightly whitish porcelain for use in marginal or interproximal areas
  - **OPAL MI (Milky) :**  
Milky shade porcelain for use in molar cusps or whitish areas
  - **OPAL AM-R (Amber Red) :**  
A slightly reddish amber porcelain for reproducing enamel shades
  - **OPAL AM-Y (Amber Yellow) :**  
A slightly yellowish amber porcelain for reproducing enamel shades
  - **OPAL AM-V (Amber Violet) :**  
A slightly violet amber porcelain for reproducing enamel shades
  - **OPAL OC (Occlusal) :**  
A slightly dull porcelain for use in the occlusal areas of molars
  
- ⑦ **Enamel Effect (5 shades, 15g and 50g each)**

Translucent enamel effect porcelain without opalescence.

  - **BT (Blue Translucent) :** Bluish translucent porcelain
  - **OT (Orange Translucent) :** Orangish translucent porcelain
  - **PT (Pink Translucent) :** Pinkish translucent porcelain
  - **GT (Grey Translucent) :** Greyish translucent porcelain
  - **T-Glass :** Highly translucent (glass-like) porcelain
  
- ⑧ **Cervical (4 shades, 15g and 50g each)**

Cervical porcelain for reproducing cervical areas. When mixed with Body porcelain, especially dark shades such as A4 or B4 are more effective.
  
- ⑨ **Cervical Trans (5 shades, 15g and 50g each)**

This translucent cervical porcelain has a slightly lower firing temperature than Body porcelain. It reproduces deeper translucent shades in cervical areas and creates smooth surfaces for tissue compatibility. It is highly fluorescent.

  - **CT-CL :** Translucent porcelain
  - **CT-W :** A slightly translucent porcelain, used for turning cervical areas whitish
  - **CT-A :** Orangish translucent porcelain for use with A shade groups mixed with CT-CL
  - **CT-B :** Yellowish translucent porcelain for use with B shade groups mixed with CT-CL
  - **CT-R :** Reddish translucent porcelain for use with R shade groups\* mixed with CT-CL

\*Vintage Halo Red-Shift Shade Guide

## 2-4. Components

- ⑩ **Color Effect (8 shades, 15g each)**

This effect porcelain can be used with or without Body porcelain, as required.

  - **MP (Mamelon Pink) :**  
Pinkish and intensive porcelains for reproducing mamelons in the incisal areas of younger patients' teeth.
  - **Mlv (Mamelon Ivory) :**  
Ivory and intensive porcelains for reproducing mamelons in the incisal areas of middle-aged patients' teeth
  - **MY (Mamelon Yellow) :**  
Yellowish and intensive porcelains for reproducing mamelons in the incisal areas of elderly patients' teeth
  - **RED (Red) :** Pinkish porcelain
  - **Y (Yellow) :** Yellowish porcelain
  - **O (Orange) :** Orangish porcelain
  - **G (Grey) :** Greyish porcelain
  - **W (White) :** Whitish porcelain
  
- ⑪ **Gum (2 shades, 15g each)**

This pink shaded porcelain is for reproducing gum shades and is fired at lower temperatures.  
Due to the lower firing temperature, it can be used after firing the regular porcelain.

  - **Gum-LP (Light pink) :** Brighter pink shaded porcelain
  - **Gum-DP (Dark pink) :** Darker pink shaded porcelain
  
- ⑫ **Correction (3 shades, 15g each)**

Can be used in small amounts for correcting after contouring or self-glazing.

  - **ADD-ON B :** Shade A3B Body correction porcelain
  - **ADD-ON T :** Translucent porcelain for correcting enamel areas
  - **CPM Fine :** Finer particle porcelain than ADD-ON B. Used for adjusting of marginal fit after glazing
  
- ⑬ **VINTAGE AL OPAQUE LINER LIQUID (3mL)**

Opaque Liner mixing liquid for adjusting the viscosity of the paste.
  
- ⑭ **VINTAGE MODELLING LIQUID (50mL, 500mL)**

Mixing liquid for the VINTAGE porcelain system (except Opaque Liner). Prevents mixed powder from frast drying and enhances the handling properties when building up.

## 2-4. Components

- 15 VINTAGE CPM MODELLING LIQUID (3mL)  
Mixing liquid for Margin porcelain and Correction porcelain.
- 16 VINTAGE MARGIN PORCELAIN ISOLATION LIQUID (7mL)  
Applied to the plaster model to allow separation from the porcelain.
- 17 VINTAGE COLOR INDICATOR (7 types)  
Color indicators are available for all VINTAGE AL shades.

  - Opaque Liner 20 shades
  - Body 20 shades
  - Enamel 18 shades  
(Opal Porcelain, Opal Effect, Enamel Effect)
  - Margin 12 shades
  - Opaque Dentin 9 shades
  - Color Effect 13 shades  
(Opaque Liner Effect, Color Effect, Gum)
  - Cervical, Cervical Trans, Correction 11 shades

## 2-5. Package [Set composition]

### VINTAGE AL AB Set 34 shades

- Opaque Liner (10 shades / 5g) : A1O, A2O, A3O, A3.5O, A4O, rootAO, B1O, B2O, B3O, B4O
- Cervical (2 shades / 15g) : AC, BC
- Body (10 shades / 15g) : A1B, A2B, A3B, A3.5B, A4B, rootAB, B1B, B2B, B3B, B4B
- Opaque Dentin (5 shades / 15g) : OD-N, OD-A3, OD-rootA, OD-B2, OD-B4
- Opal Enamel (4 shades / 15g) : Opal 57, Opal 58, Opal 59, Opal 60
- Opal Effect (1 shade / 15g) : Opal T
- Correction (2 shades / 15g) : ADD-ON B, ADD-ON T
- OPAQUE LINER LIQUID (1 bottle / 3mL)
- VINTAGE MODELLING LIQUID (1 bottle / 50mL)



### VINTAGE AL CD Set 19 shades

- Opaque Liner (7 shades / 5g) : C1O, C2O, C3O, C4O, D2O, D3O, D4O
- Cervical (2 shades / 15g) : CC, DC
- Body (7 shades / 15g) : C1B, C2B, C3B, C4B, D2B, D3B, D4B
- Opaque Dentin (3 shades / 15g) : OD-C2, OD-C4, OD-D3
- OPAQUE LINER LIQUID (1 bottle / 3mL)



### VINTAGE AL Whitening Set 10 shades

- Opaque Liner (3 shades / 5g) : W1O, W2O, W3O
- Body (3 shades / 15g) : W1B, W2B, W3B
- Opaque Dentin (1 shade / 15g) : OD-N
- Opal Enamel (2 shades / 15g) : Opal 56, Opal 57
- Opal Effect (1 shade / 15g) : Opal T
- OPAQUE LINER LIQUID (1 bottle / 3mL)



### VINTAGE AL Enamel Effect Set 18 shades

- Opal Effect (8 shades / 15g) : Opal T, Opal SL, Opal WE, Opal MI, Opal OC, Opal AM-R, Opal AM-Y, Opal AM-V
- Enamel Effect (5 shades / 15g) : BT, OT, PT, GT, T-Glass
- Cervical Trans (5 shades / 15g) : CT-CL, CT-W, CT-A, CT-B, CT-R



## VINTAGE AL Margin Porcelain Set

13 shades

Margin (10 shades / 15g) : CLM, NM, A<sub>3</sub>M, rootAM, B<sub>2</sub>M, B<sub>4</sub>M, C<sub>2</sub>M, C<sub>4</sub>M, D<sub>3</sub>M, W<sub>1</sub>M

Effect shades (1 shade / 15g) : LPM

Correction (2 shades / 15g) : ADD-ON B, CPM Fine

VINTAGE CPM MODELLING LIQUID (1 bottle / 3mL)

VINTAGE MARGIN PORCELAIN ISOLATION LIQUID (1pen / 7mL)



## VINTAGE AL Color Effect Set

13 shades

Opaque Liner Effect shades (3 shades / 5g) : OM-Y, OM-LP, OM-DP

Color Effect (8 shades / 15g) : MP, MY, Miv, RED, Y, O, G, W

Gum (2 shades / 15g) : Gum-LP, Gum-DP



## Individual products

- Opaque Liner (23 shades / 5g)
- Margin (11 shades / 15g)
- Opaque Dentin (9 shades / 15g, 50g)
- Body (20 shades / 15g, 50g)
- Opal (5 shades / 15g, 50g)
- Opal Effect (8 shades / 15g, 50g)
- Enamel Effect (5 shades / 15g, 50g)
- Color Effect (8 shades / 15g)
- Cervical (4 shades / 15g, 50g)
- Cervical Trans (5 shades / 15g, 50g)
- Gum (2 shades / 15g)
- Correction (3 shades / 15g)

## Related products

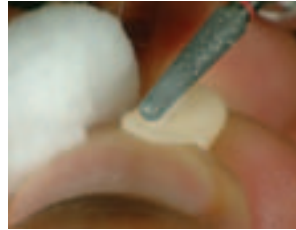
- VINTAGE AL/ZR OPAQUE LINER LIQUID (3mL)
- VINTAGE MODELLING LIQUID (50mL, 500mL)
- VINTAGE CPM MODELLING LIQUID (3mL)
- VINTAGE MARGIN PORCELAIN ISOLATION LIQUID, pen (7mL)
- VINTAGE PORCELAIN ISOLATION LIQUID, bottle (10mL)
  
- VINTAGE AL COLOR INDICATOR (7 types)
  - Opaque Liner
  - Body
  - Enamel (Opal, Opal Effect, Enamel Effect)
  - Margin
  - Opaque Dentin
  - Color Effect (Opaque Liner Effect, Color Effect)
  - Cervical, Cervical Trans, Correction
  
- DIE COLOR CHECKER (Light-cure composite for dies)
  - SHOFU DIE COLOR CHECKER (7 colors)
  - SHOFU DIE COLOR CHECKER INDICATOR (1 set)
  - SHOFU DIE STICK (30 pcs)
  - VINTAGE PORCELAIN ISOLATION LIQUID (10mL)
  - UNI BRUSH No.1 (1 pc)

### 3 Preparation

#### 3-1. Preparation before Use

##### Procera® copings

Once the Procera® coping has been adjusted, sandblast it with alumina oxide (about 50 microns) at an air pressure of 2-3 bar or clean the surface with an ultrasonic cleaner, and fire it according to the following schedule.

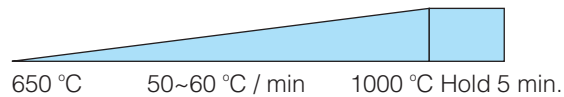


Adjusting with HP Diamond points  
NOTE: Excess pressure, coarse diamond points, and high speed grinding lead to chipping and cracking.



Shaping and finishing with CeraMaster Coarse (diamond impregnated polisher)

##### Air firing



Preheating Procera® copings

Procera® is a registered trademark of Nobel Biocare AB, Sweden.



Shade after heat treatment (right: after)

##### Hint

- Procera® coping turns whitish when heat-treated.
- For adjusting Procera® coping, use water cooling and grind in lower speed to avoid over-heating.

- When other types of alumina frame are used  
When other types of alumina frame such as glass infiltration or foil-matrix, are used, follow the respective manufacturer's instructions .

##### Hint

Vintage AL shades are matched to Procera copings. For other coping materials, please select the lightest shade available (as white as possible).

##### SHOFU DIE COLOR CHECKER

Select the shade of SHOFU DIE COLOR CHECKER that is closest to the prepared teeth, fill into the coping, light cure to make shade verification core model. (For more details, see the DIE COLOR CHECKER-"Directions for use")



After applying VINTAGE PORCELAIN ISOLATION LIQUID, fill DIE COLOR CHECKER composite into coping, insert Die Stick and light cure



After curing, remove the coping



Die for shade verification



4-1. VINTAGE AL Shade Charts

Table 1 - Basic Shades

Shade	A1	A2	A3	A3.5	A4	rootA
Opaque Liner	A1O	A2O	A3O	A3.5O	A4O	rootAO
Cervical	-	-	A3B : 2 AC : 1	A3.5B : 1 AC : 1	A4B : 1 AC : 1	AC
Body	A1B	A2B	A3B	A3.5B	A4B	rootAB
Opal	57	58	59	59 : 1 60 : 1	60	60

Shade	B1	B2	B3	B4
Opaque Liner	B1O	B2O	B3O	B4O
Cervical	-	-	B3B : 1 BC : 1	BC
Body	B1B	B2B	B3B	B4B
Opal	57	58	59	60

Shade	C1	C2	C3	C4	D2	D3	D4
Opaque Liner	C1O	C2O	C3O	C4O	D2O	D3O	D4O
Cervical	-	C2B : 2 CC : 1	C3B : 1 CC : 1	CC	D2B : 1 DC : 1	D3B : 1 DC : 1	DC : 2 BC : 1
Body	C1B	C2B	C3B	C4B	D2B	D3B	D4B
Opal	58	58	59	60	58	59	59

Table2 - Whitening Shades

Shade	W1	W2	W3
Opaque Liner	W1O	W2O	W3O
Cervical	-	-	-
Body	W1B	W2B	W3B
Opal	56	56 : 2 57 : 1	56 : 1 57 : 2

Table 3 - Opaque Dentin Shades

Shade	1	2	3	3.5	4	root
A	OD-N	OD-N : 1 OD-A3 : 1	OD-A3	OD-A3 : 2 OD-rootA : 1	OD-A3 : 1 OD-rootA : 2	OD-rootA
B	OD-N : 1 OD-B2 : 1	OD-B2	OD-B2 : 1 OD-B4 : 1	-	OD-B4	-
C	OD-N : 1 OD-C2 : 1	OD-C2	OD-C2 : 1 OD-C4 : 1	-	OD-C4	-
D	-	OD-N : 1 OD-D3 : 1	OD-D3	-	OD-D3 : 1 OD-B4 : 1	-
W	OD-W1	OD-W1 : 2 OD-N1 : 1	OD-W1 : 1 OD-N1 : 2	-	-	-

Table4 - Margin Shades

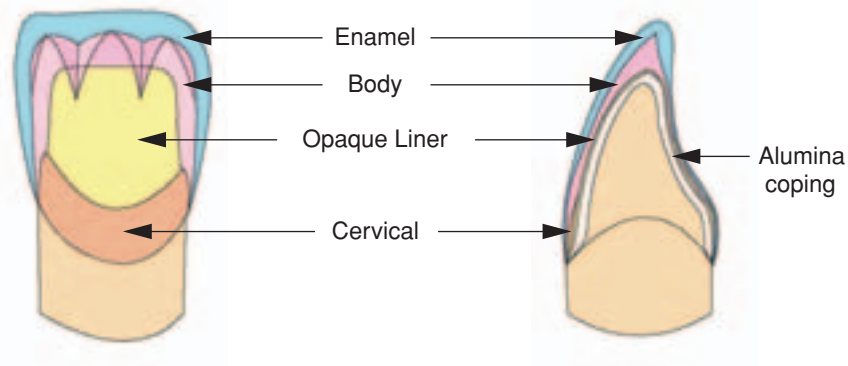
Shade	1	2	3	3.5	4	root
A	NM	NM : 1 A3M : 1	A3M	A3M : 2 rootAM : 1	A3M : 1 rootAM : 2	rootAM
B	NM : 1 B2M : 1	B2M	B2M : 1 B4M : 1	-	B4M	-
C	NM : 1 C2M : 1	C2M	C2M : 1 C4M : 1	-	C4M	-
D	-	NM : 1 D3M : 1	D3M	-	D3M : 1 B4M : 1	-
W	W1N	W1N : 2 NW : 1	W1N : 1 NW : 2	-	-	-



## 4-2. Layering diagram

### Basic layering 1 (when Opaque Liner is used)

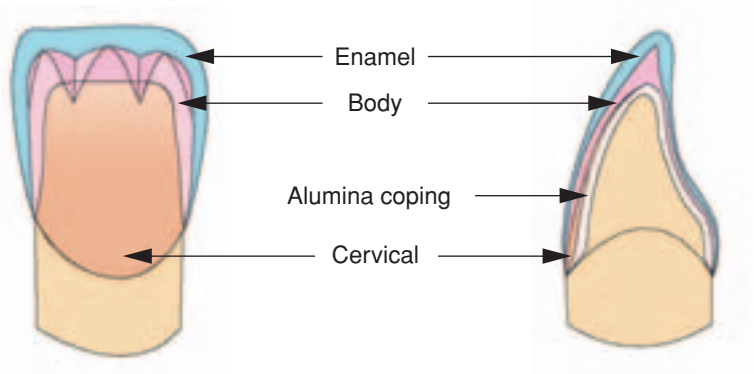
Opaque Liner is applied to the alumina to create the base shade of the alumina coping. In case of discolored teeth or where a metal post has been placed, apply Opaque Liner.



Layering structure using Opaque liner

### Basic layering 2 (when Opaque Liner is not used)

In cases with no discolored teeth build-up without using Opaque Liner and apply Cervical porcelain from the cervical to incisal areas. For darker shades, apply Stain, fire it to fix in place and create the base shade of the coping before applying Cervical porcelain.



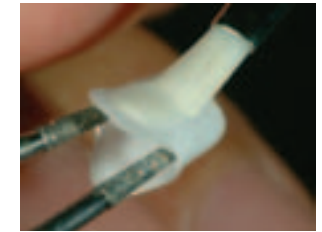
Layering structure without Opaque Liner

## 4-3. Basic layering

### When using Opaque Liner

#### (1) First Opaque Liner firing

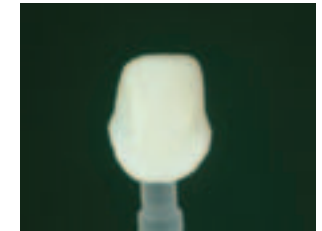
In case of discolored teeth or where a metal post has been placed, darker areas should be masked with Opaque Liner. Apply Opaque Liner to cover the whole alumina coping and fire it.



Application of Opaque Liner

#### (2) Second Opaque Liner firing

After firing the first layer of Opaque Liner apply a second layer to complete the masking of the alumina coping.



Firing Opaque Liner

#### Note

- As the Opaque Liner liquid may separate, always mix it before use.
- If bubbles appear in the Opaque Liner, please note the following:
- Please avoid applying Opaque Liner in excessively thick layers.
- Dry thoroughly before firing.
- Avoid placing copings coated with Opaque Liner on a hot firing tray.



Application of Cervical porcelain

#### (3) Firing Cervical porcelain

Apply Cervical porcelain to the cervical area and fire.



After firing Cervical porcelain

#### Hints

- Procera® copings should be heat-treated in advance.
- The basic shade of Opaque Liner can be optimized by using SHOFU Porcelain Stain (Shade No. 41 – 49).

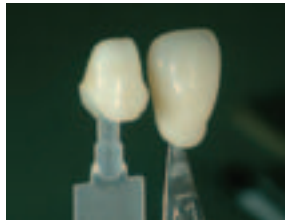
## ► Where no Opaque Liner is used

### (1) Firing Cervical porcelain

Prepared teeth which are not discolored can be restored without using Opaque Liner. In such cases Cervical porcelain is applied and extended from the cervical area to the incisal edge. For darker shades apply Stain, fire it to fix in place and create the base shade of the coping before firing Cervical porcelain.



Staining



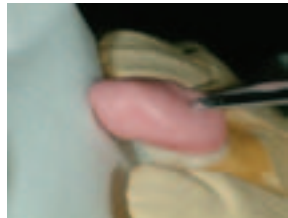
After staining



## 4-4. Application and firing of Body and Enamel porcelains

### (1) Application of Body porcelain

Apply Body porcelain and condense it. The shape should match that of the adjacent tooth.



Application of Body porcelain

### Hint ● Application of Body porcelain

We recommend condensing this porcelain slightly more than metal-ceramics.

### (2) Cut back of Body porcelain

To keep the space for Enamel porcelain, cut back the Body.

#### ① Cut back to 1/3 point from incisal top



#### ② Cut 2/3 point from incisal top



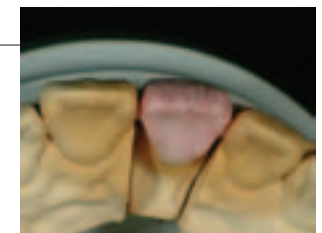
#### ③ Cut the interproximal area up to lingual side



#### ④ Add mamelon(finger like)structure



#### ⑤ The correct Body shape

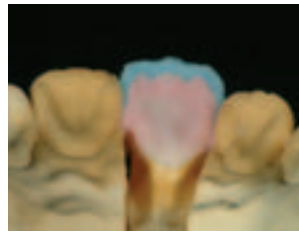


### (3) Application of Opal porcelain

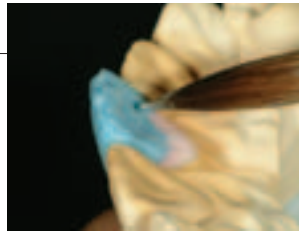
- ① Opal porcelain must be overdimensioned to compensate for firing shrinkage.



- ② Cut back the lingual incisal edge to confirm the shape of the dentin.



- ③ Build up the reduced lingual incisal edge with Opal porcelain.

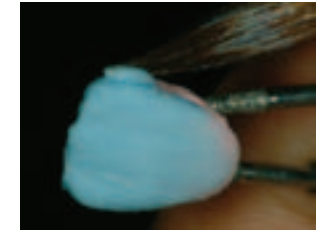


#### Hint

- Cutting back the lingual incisal edge  
Check that the Body and Enamel porcelains have not blended and are still layered separately. If the layer is interrupted or the individual layers blend, the incisal area will not be properly translucent.

### (4) Building-up the interproximal area

- Remove the crown from the model, build-up Opal Porcelain to the interproximal area and condense. Covering the entire surface with Opal porcelain creates a natural looking shade. (Wrap around effect)



Build up of interproximal area

#### Hint

- Wrap around effect:  
Coat the labial, lingual incisal, and interproximal surfaces with Opal Porcelain. Coating the entire surface with Opal Porcelain creates depth and translucency of shade.

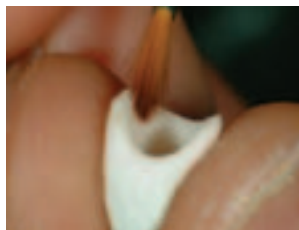


#### Note

- The porcelain used in the photo has stronger pigments than the actual porcelain - this enables the positioning of the individual layers to be depicted more clearly.

### (5) Firing preparation

After building-up fully adjust the shape and remove the excessive porcelain from the cervical area with a dry brush. Then remove the porcelain from inside the crown and fire.



Cleaning inside

### (6) Contouring

After firing contour the crown with Dura-Green Stones and/or CeraMaster Silicon Points and, if necessary, adjust the shade with VINTAGE Stain before glaze firing.



Contouring



### (7) Shade confirmation

By direct comparison the VINTAGE AL restoration matches perfectly with the Shade Guide.



Shade confirmation

## 5 Technical advice for the various porcelains

### 5-1. VINTAGE AL Margin Porcelain

VINTAGE AL Margin porcelain is used for adjusting alumina frames. It eliminates white lines along the margins of alumina copings and easily reproduces the marginal shade.

#### Creating copings for Margin porcelain when using Procera® copings

##### ① Custom die method

Take a duplicating impression of the working model and cast a custom die using hard die stone. Contour the marginal area of the custom die with a carbide bur and scan the new margin line.

##### ② The contouring method

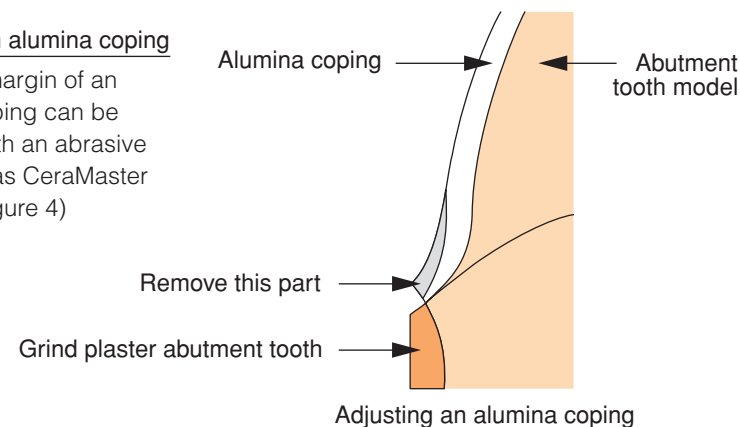
Contour the margin area of the Procera® coping to shorten it with an abrasive point such as CeraMaster Coarse.

##### ③ Adjusting the coping design

The margin should be shorter than indicated by the scanning data obtained while designing the coping by data compensation.

#### 1. Adjusting an alumina coping

The labial margin of an alumina coping can be adjusted with an abrasive point such as CeraMaster Coarse. (Figure 4)



#### 2. Application of MARGIN PORCELAIN ISOLATION LIQUID

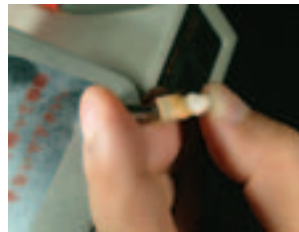
Apply one layer of Margin Porcelain Isolation Liquid to the marginal area of the working model and remove excess material by air.



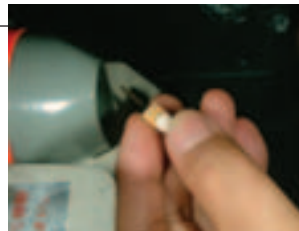
Application of Margin Porcelain Isolation Liquid

### 3. Application of Margin porcelain

Place the crown on the working model and apply Margin porcelain either mixed with distilled water or CPM Modeling liquid (for small corrections) and condense it.



After contouring dry it with a hair dryer, remove the crown from the working model and fire it.



### 4. Second build-up of Margin porcelain

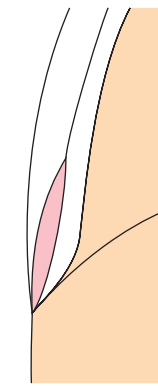
After firing, apply additional Margin porcelain where necessary and condense it. Then remove the crown from the working model and fire it. If necessary, please repeat this procedure to fix the margin area.



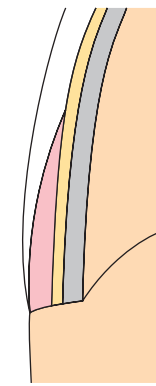
#### Hint

##### ● Margin Layer

The layer of Margin porcelain applied to the margin area should be as thin as possible, which is different to when applying metal-ceramic Margin porcelain. If the layer is too thick, the full strength of the alumina coping may not be obtained.



Alumina coping



Metal coping

Comparison of margin design



## 5-2. Cervical Trans

Cervical Trans was designed with a lower firing temperature to produce smooth surfaces for reproducing deeper translucent shades in cervical areas, easy cleaning, and tissue-compatibility. Its higher fluorescence creates cervical areas which are translucent and brightly shaded.



Comparison of fluorescence in cervical area.

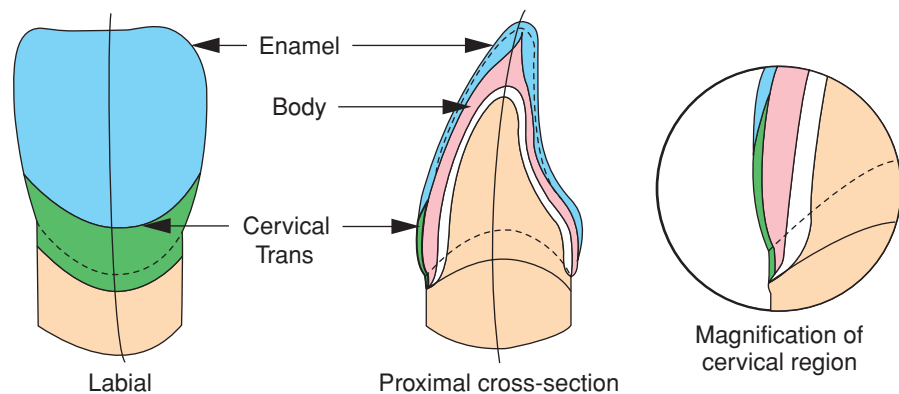
CT-CL : Translucent porcelain

CT-W : Slightly translucent porcelain for creating whitish cervical areas

CT-A : Orange translucent porcelain for creating the A shade group when mixed with CT-CL

CT-B : Yellowish translucent porcelain for creating the B shade group when mixed with CT-CL

CT-R : Reddish translucent porcelain for creating the R shade group when mixed with CT-CL



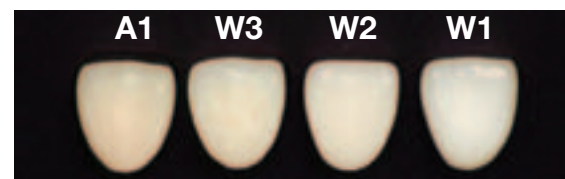
Cervical trans build-up

### Hint ● Cervical Translucency

In order to enhance the translucency of the cervical area and to increase tissue-compatibility, build-up Cervical Trans in the cervical area and fire with enamel porcelain. Since the firing temperature is set lower than that of enamel porcelain, smooth surfaces can be obtained.

## 5-3. VINTAGE AL WHITENING SET

VINTAGE AL includes a Whitening Set for bleach shades. It reproduces shades which are brighter and lighter than A1, previously impossible with conventional porcelain.



Shade comparison of A1, W3, W2 and W1

Table 5 - Whitening Porcelain Shade Chart

Shade	W1	W2	W3
Opaque Liner	W1O	W2O	W3O
Cervical	-	-	-
Body	W1B	W2B	W3B
Opal	56	56 : 2 57 : 1	56 : 1 57 : 2

## 5-4. VINTAGE AL Correction porcelain

VINTAGE AL Correction porcelain is used for adding material when needed during the biscuit bake, contouring, or glazing.

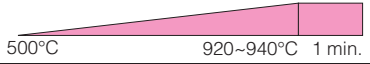
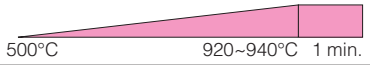
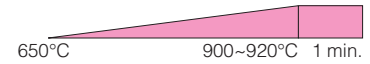
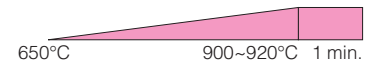
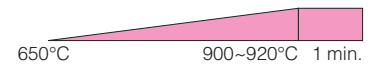
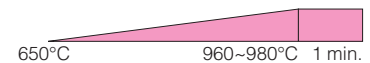
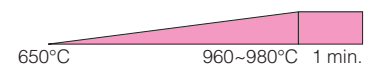
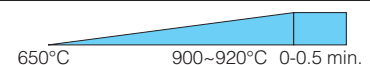
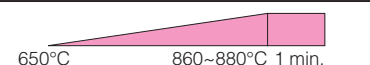
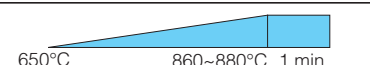
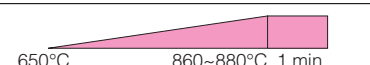
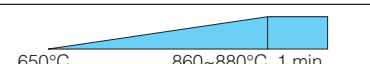
- If the crown shrinks excessively during the biscuit bake
  - Contour and clean the surface before applying Correction porcelain. Then fire in air to self-glaze.
- Finishing after self-glazing
  - After the Correction firing, finishing and polishing with CeraMaster, Ceramisté silicone polishers or diamond polishing paste.



### Hint ● Correction

If the crown has shrunk considerably, apply Body or Opal porcelain and proceed with a regular 2nd firing.

6-1. Firing schedule

Table 6 - Firing schedule table

Type of porcelain	Drying time (min.)	Increasing temperature (°C /min.)	
1st Opaque Liner	7~8	50	
2nd Opaque Liner	7~8	50	
Cervical	5~6	50	
1st Body, Enamel	5~6	50	
2nd Body, Enamel	5~6	50	
1st Margin	5~6	50	
2nd Margin	5~6	50	
Self Glaze	5~6	50	
1st Gum	5~6	50	
Gum Glaze	5~6	50	
1st Correction	5~6	50	
Correction Glaze	5~6	50	

 Vacuum firing  
 Firing in the air

PLEASE NOTE :

Firing conditions vary due to the different designs and operating voltages of porcelain furnaces. It is essential to carry out test firings before using the porcelain for actual restorations.

**Hint** ● Heat rate

As the heat conductivity of an alumina coping is low compared to that of a metal coping, it is advisable to set the furnace to a low heat rate.

6-2. Technical Data

(1) Coefficient of thermal expansion and Glass transition point

		Coefficient of Thermal Expansion (25~500°C)	Glass Transition Point
Opaque Liner	2.Firing	6.0 x 10 <sup>-6</sup> K <sup>-1</sup>	585°C
	4.Firing		
Margin	2.Firing	7.0 x 10 <sup>-6</sup> K <sup>-1</sup>	610°C
	4.Firing		
Body	2.Firing	6.7 x 10 <sup>-6</sup> K <sup>-1</sup>	590°C
	4.Firing		
Cervical Trans	2.Firing	6.5 x 10 <sup>-6</sup> K <sup>-1</sup>	575°C
	4.Firing		
Correction	2.Firing	6.4 x 10 <sup>-6</sup> K <sup>-1</sup>	565°C
	4.Firing		

PLEASE NOTE :

As VINTAGE AL has a different coefficient of thermal expansion to those of VINTAGE or VINTAGE HALO, never mix or combine them.

(2) Solubility Test (ISO Specification : Under 100 µg/cm<sup>3</sup>)

	Solubility amount (µg/cm <sup>3</sup> )
Body, Enamel	7.7



## 7 Troubleshooting

	Problem	Cause	Remedy	Note
Base	Opaque Liner difficult to apply	Too much liquid in Opaque Liner.	Mix well before use.	If only the surface layer is used without being mixed, the paste contains excessive liquid, making it difficult to apply to the base.
		Coping surface is too smooth.	Roughen the coping surface. (Use an abrasive such as a diamond point at low speed and water-cooled)	When coping surface is smooth, paste is difficult to apply.
	Cervical porcelain difficult to apply	Too much liquid mixed in.	Mix in less liquid.	
		Surface is too smooth.	Roughen the coping surface. (Use an abrasive such as a diamond point at low speed and water-cooled)	When coping surface is smooth, paste is difficult to apply.
	Bubbling of Opaque Liner	Inadequate pre-drying time.	Increase the pre-drying time.	Inadequate pre-drying causes the liquid in the Opaque Liner to be fired before being dried properly, which causes bubbles to form.
		Pre-drying temperature too high.	Lower the pre-drying temperature to 500°C.	If the pre-drying temperature is too high, the liquid bubbles while drying.
		The firing tray is too hot.	After lowering the firing platform and removing the restoration, wait 2 – 3 minutes before placing a new restoration on the firing tray.	If a coping coated with Opaque Liner is placed on a hot firing tray, the Opaque Liner liquid may boil and cause bubbles. Therefore, the coping must only be placed on a cool firing tray.
		Coping is contaminated.	Sandblast the coping with aluminum oxide to clean it.	Any remains of bonder from the rotary instruments left on the coping surface may cause bubbles. Sandblast with aluminum oxide (50µm, 1 – 2 bars) and clean with a steam cleaner, ultrasonic unit or distilled water. Then fire in air.
		Inadequate vacuum.	Check the vacuum.	Bubble incorporated during application.
	Porcelain build-up	High firing shrinkage	Inadequate condensation.	Condense Body and Enamel porcelain more.
Cervical area raised		Cervical area condensed inadequately.	Condense cervical area more.	
Lingual surface cracked due to shrinkage		Inadequate condensation. High shrinkage due to a large amount of material being applied.	Condense Body and Enamel porcelain more or control the shrinkage by placing a cut in the lingual surface.	

	Problem	Cause	Remedy	Note	
Porcelain build-up	Explosive crack occurred	Pre-drying time is too short.	Increase the pre-drying time.	The drying time is an important step in the firing process. If the drying time is too short, liquid remains inside the porcelain and when inserted into the furnace the rapid increase in temperature causes the liquid to boil and explode when fired. When the pre-drying time is too long, small cracks occur on the surface from drying shrinkage. These cracks spread due to firing shrinkage and create shallow cracks on the surface.	
	Small cracks on the surface	Pre-drying time is too long.	Decrease pre-drying time.		
	Bubbles form	Bubble entrapped during application	Make certain that no bubbles are entrapped while mixing the material on the palette.		As all-ceramic crowns exhibit lower thermo conductivity than metal-ceramic restorations, firing commences at the surface, which tends to trap the bubbles inside. Therefore, it is extremely important to mix and build up porcelain without entrapping bubbles. Also, remixing dried porcelain easily causes bubbles to be entrapped.
		Porcelain dried during application or was remixed.	Do not allow the porcelain to dry during building up.		
Heat rate is too high.		Reduce the heat rate of the porcelain furnace.			
	Inadequate vacuum.	Check the vacuum level of your porcelain furnace.			
Abrasives	Chipped incisal edges	Inappropriate speed and direction of rotation of abrasive stone.	To prevent chipping of the incisal edge, select the correct speed and direction of rotation of the abrasive stone.		
Glaze	No glaze	Uneven surface.	Glaze after smoothen the surface with Dura-Green Fine, CeraMaster, Silicon Point.	Glazing depends on the condition of the porcelain surface. The smoother the surface, the more stable the glaze. After rinsing apply Stain Liquid and verify the shade, then glaze.	
		Surface not cleaned thoroughly.	Rinse thoroughly.		
Shade	The shade of the crown is not saturated	Procera® copings influence the shade.	Adjust the coping surface with stain shade. Use Opaque Liner or Cervical.	SHOFU Porcelain Stain (Shade No. 41 – 49) is recommended.	
		The layer of Body porcelain is too thin.	Apply a thicker layer.		
		Inadequate firing.	Check the firing temperature.		
	Enamel is not transparent	Porcelains blended during building-up.	Take care not to blend the layers while building up.	Fire after body cutback, apply enamel and fire again.	
		Insufficient burnout due to inadequate drying or incorrect vacuum starting time.	Burnout properly to ensure adequate drying or delay the vacuum starting time.	Porcelain contains organic pigments or is sometimes contaminated with tissue fiber while building up. These must be burned out during the pre-drying stage. If they are not burned out properly, they may cause bubbles or make the porcelain translucent.	

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 SHOFU INC. 11 Kamitakamatsu-cho, Fukuine, Higashiyama-ku, Kyoto 605 - 0983, Japan  
SHOFU INC. Singapore Branch, 10 Science Park Road, #03-12 The Alpha Science Park II, Singapore 117684  
SHOFU INC. Shanghai Rep. Office, No. 645 Jiye Road, She Shan Industry Park Songjiang 201602, Shanghai, China  
SHOFU DENTAL CORPORATION 1225 Stone Drive, San Marcos, CA 92078-4059, USA  
SHOFU DENTAL PRODUCTS LTD. Dukes Factory, Chiddingstone Causeway, Tonbridge, Kent, TN11 8JU, UK  
SHOFU DENTAL GmbH Am Brüll 17, 40878 Ratingen, Germany, EU REPRESENTATIVE

