



DUCERAM LOVE

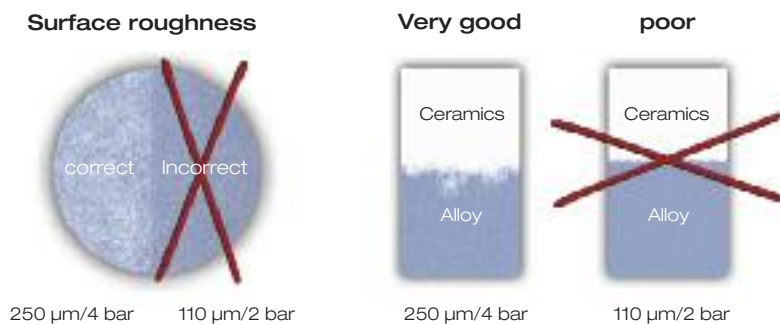
Guidelines for veneering  
non-precious alloys

# Veneering non-precious alloys: The path to success\*

The innovative Duceram love ceramic veneering material can be safely used on precious and non-precious alloys, for a broad range of indications. Since non-precious alloys and precious alloys react differently to ceramic firing, ensure that the following parameters are observed for safe veneering of non-precious alloys:

## 1. Framework design

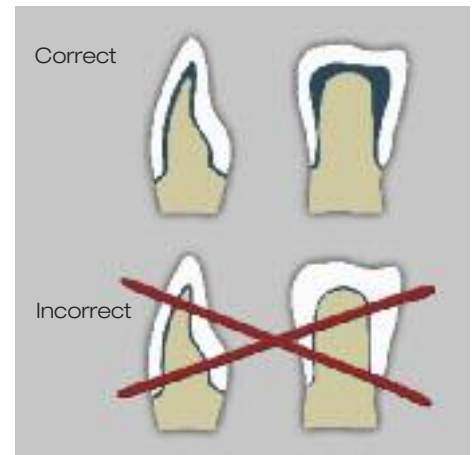
- The framework must be free of any sharp edges.
- When casting non-precious alloys, it is recommended to use only ceramic crucibles and to use only new material.
- Air-abrade the frameworks using 250- $\mu\text{m}$  aluminum oxide at 4 bar of pressure.



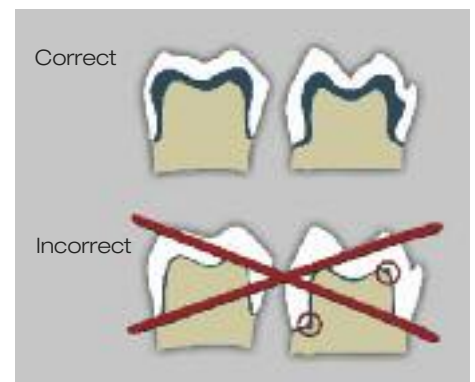
- An oxide firing cycle is recommended to check the framework, but it is not mandatory. Compartis CoCr frameworks will have been oxidized at the factory, requiring no separate oxide firing. Post-finishing of Compartis CoCr frameworks requires **a new round of sandblasting**.

## 2. NE-Bonder (Powder)

- Wet the surface evenly using a glass instrument.
- Apply a thin covering bonder layer with Ducera Liquid B or Ducera Liquid OCL universal. Oxides will not be able to penetrate the layer.
- Heat the bonder to 980 °C at 55 °C/min (best bond through maximum vitrification).



Anterior crowns



Molar crowns



\* This description does not replace the regular Instructions for Use. It is solely intended as a visual guide to aid production.

### 3. NE Bonder (Paste)

- Apply a covering layer of NE-Bonder Paste with a paste opaque brush.
- Prior wetting of the framework with a very thin layer of paste opaque liquid greatly facilitates application of NE-Bonder Paste.
- Heat the bonder to 980 °C by 55 °C/min (best bond through complete vitrification).



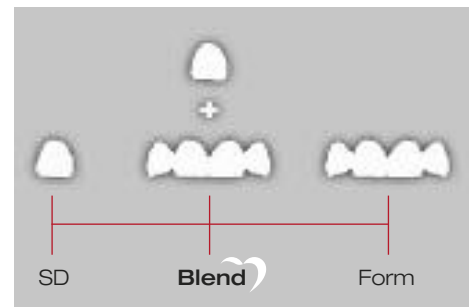
### 4. Opaque

- Apply a uniform covering layer of paste opaque.
- Perform the opaque firing at 910 °C.
- The homogenous surface indicates good vitrification and excellent bond.
- Underfiring will weaken the bond.



### 5. Build-up

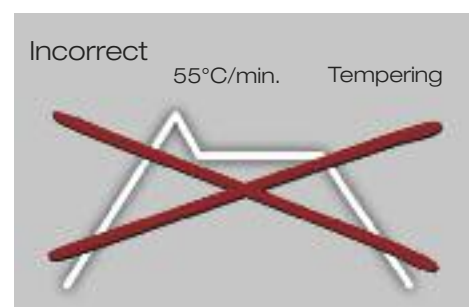
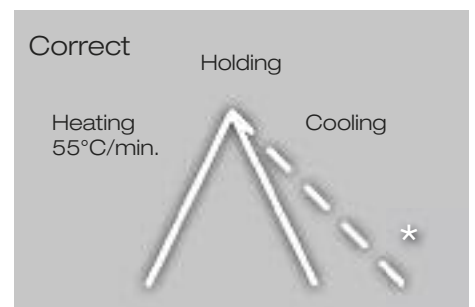
- Ducera Liquid SD is the proven standard liquid for single-crown restorations.
- Ducera Liquid Blend is a new modelling liquid ideally adapted for love ceramics. Ducera Liquid Blend has the advantage of excellent shaping properties and longer working times.
- Ducera Liquid Form also adds stability and has been specially designed for a wide-range of restorations.



Modelling liquids

### 6. Firing

- The Duceram love firing program has been explicitly tailored for the DeguDent range of alloys.
  - Third-party alloys must be processed according to the manufacturers' Instructions of Use.
  - Maximum stability when veneering DeguDent alloys is obtained without a tempering phase.
  - The highly homogenous material delivers a beautiful surface lustre.
- \* Non-precious alloys require 6 min of long-term cooling to relief any stress.



## General firing program for non-precious alloys



General firing programm	Pre-heating	Pre-drying min.	Drying Closing min.	Pre-heating min.	Heating	Firing	Holding		Vacuum hPa	Tempering* min.	Cooling* min.
	°C				°C/min.	°C	Vacuum min.	No Vacuum min.			
NE-Bonder Powder/Paste	575	4/6	2	1	55	980	0	2/3	50	-	-
Opaque	550	6	2	1	100	910	2	2	50	-	-
Shoulder 1	500	1	3	2	100	880	0,5	0,5	50	*3min/850°C	6*
Shoulder 2	500	1	3	2	100	860	0,5	0,5	50	*3min/850°C	6*
Dentine 1	500	4	3	2	55	820	0,5	0,5	50	-	6
Dentine 2	500	4	2	2	55	810	0,5	0,5	50	-	6
Glaze	500	0	2	2	55	800	-	0,5	-	-	6
FSM / Correction	450	1	2	2	55	680	0,5	0,5	50	-	-
Stains	450	1	2	1	55	660	0	1	-	-	-

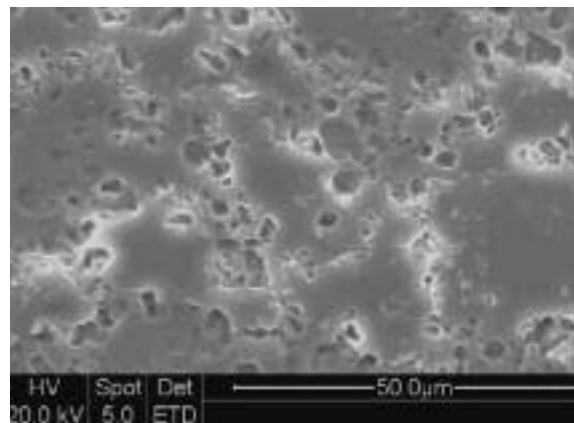
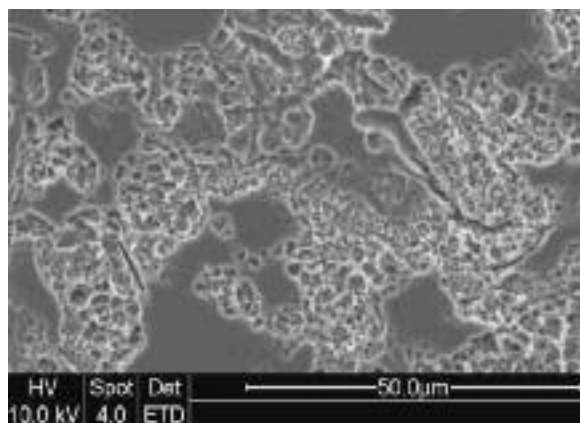
\* For alloys with a CTE above 14.6  $\mu\text{m}/\text{m}\cdot\text{K}$  (25 – 500°C), shoulder firing must be extended by a tempering phase (3 min/850°C) and a cooling phase (6 min).

The firing temperature must be adjusted to the number of units fired. Five to ten units require an increase by 5°C to 10°C; more than ten units require an increase by 10°C to 20°C. However, this does not apply to non-precious alloys with a CTE above 14.6  $\mu\text{m}/\text{m}\cdot\text{K}$  (25 – 500°C).

The values listed here are intended for orientation only and should be regarded only as guidelines. Your firing results may differ. All firing results depend on the performance of the furnace used, which in turn depends on the make, model and age of the furnace. Therefore, the guideline values will have to be adapted individually for each firing. We recommend running a test firing cycle to evaluate the performance of the furnace used. We have compiled and checked all values and other data with great care. However, we cannot under any circumstances be liable for your results.

## Duceram love – innovative material design

With conventional ceramics, the properties of leucite are used to control the coefficient of thermal expansion. With Duceram love, the preset coefficient of thermal expansion will not change. The leucite is restricted to a stabilizing function thanks to the homogeneous distribution of the fine leucite crystals within the glass phase. The internal tension of the ceramic material will be automatically adjusted to the appropriate value on strict compliance with the suggested firing program.



### Conventional ceramics

- Heterogeneous leucite/glass structure with leucite granules > 50  $\mu\text{m}$  in size
- Component strength 60 – 70 MPa
- Cooling and tempering required to compensate stress peaks

### Duceram love

- Delicate structure of leucite crystals with granules < 5  $\mu\text{m}$  in size for a homogeneous distribution of tension during rapid cooling
- Robust component strength at 100 MPa
- No tempering required