

What the lab receives:

A. From uploaded files the restoration is fully milled to your designed shape and precoloured to your required shade with lighter cusps ready for final stain and glaze. The bite and contacts may need final adjustments.

B. From models, fully milled to either your wax-up or as designed at Bristol Crown. Precoloured to your required shade with lighter cusps ready for final stain and glaze. The bite and contacts may need final adjustments.

What the lab needs to do:

1. Adjust the bite and contacts. The bite is probably best onto a polished Zirconia island. NB. Loose contacts will become firm contacts with the layer of glaze powder. Any lost contacts or design errors can be retrieved with the addition of a small layer of porcelain without compromising the final restoration. Also check the marginal fit and adjust if necessary. Next sandblast all surfaces with 50 micron AlO_2 at around 4-5 bar. Finally clean off any remaining particles of AlO_2 .

2. Fix any detailed stains (such as fissure stain or light stress cracks etc) at around 800°C . Next flow any colour enhancing stains onto the crown (maybe to create bluer cusps/whiter cusp tips/darker cervical stain/bring up the main body colour etc) Coloured stain can be mixed with glaze powder to create a 'blush' effect rather than streaky stain marks or well recommended is the GC lustre stain kit which can match Vita stains and more.

3a. Finally cover with a thin layer of glaze as necessary and fire using normal glaze temperatures as a guide. However, since Zirconia is heat resistant, perhaps for around 4 minutes longer (vary as required). Alternatively slow the heat rate down and hold for less time.

3b. Alternatively, after fixing any fissure stain, you can simply polish the crown with diamond polishing paste to achieve a high lustre.

The Material itself:

Vitality™ is made from a high translucency Zirconia. There are two main factors affecting the translucency of Zirconia:

- i. Grain size and structure** – the smaller and more homogenous the particles are, the greater the translucency.
- ii. Aluminium Oxide** – the less AlO_2 in the Zirconia the better the translucency. However, AlO_2 is responsible for aging resistance, so really we need to keep it.

Some manufacturers are offering Zirconia with reduced or even NO AlO_2 at cheaper prices. Some manufacturers request higher sintering temperatures, which also improves translucency BUT weakens the material even more!

So... in these materials with the shortcuts employed, flexural strength will be lower and will also decrease considerably.

Vitality™ uses high quality Zirconia with certain refinements to the grain size and crystal structure. This maintains the high flexural strength and also maintains its aging resistance while increasing the translucency by around a further 20%.

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