

# enliven

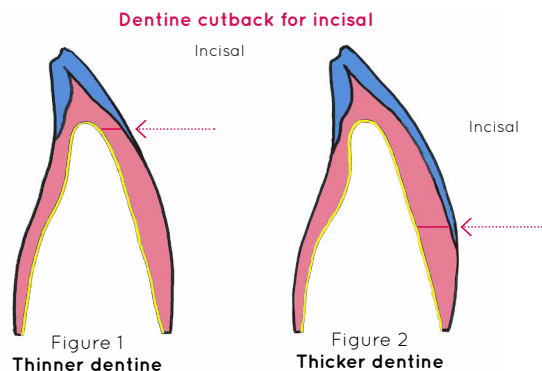
brighter smiles made easy

User Manual

**schoTTlander**

**Condensed Instructions for Use.** For full Instructions please see following pages.

1. **Alloys:** Non Precious, Semi Precious & Precious Alloys with coefficient of expansion between  $13.8 - 14.9 \times 10^{-6} \text{ }^{\circ}\text{C}^{-1}$  may be used. Prepare your copings and where indicated degas to the alloy manufactures directions for use.
2. **Opaque Applications:** Stir contents in the tub before each application.  
Apply an even thin layer completely masking the coping.  
When fired the 1st Opaque has a slight shine with a partial opaque coverage to the applied surface.  
  
2nd Opaque: Apply a thin even layer masking the 1st Opaque.  
When fired the Opaque has a slight shine.
3. **Dentine & Incisal Build Up**  
The dentine to full contour and reduce for incisal layer:  
  
Figure 1 - when dentine thickness 0.5 to 0.7mm  
  
Figure 2 - when dentine thickness >0.7mm
4. **Small Corrections & Glaze** may be fired at the same time.
5. Furnace temperatures vary. Adjust high temperature to give appearance in firing chart.



Oxidation	Refer to the manufacture's instructions for the alloy						
	Start Temp	Minimum Drying Time	Temp Rise °C/min	Vacuum °C/min (720mm Hg)	High Temp	Hold Time Air	Appearance
1st Opaque Firing	450°C	8 minutes	80°C	Yes	980°C	1 minute	Slight shine
2nd Opaque Firing	450°C	6 minutes	60°C	Yes	950°C	1 minute	Slight Shine
All other firings*	450°C	6 minutes	60°C	Yes	930°C	1 minute	Slight Shine

\* Through Unifire® Technology.

Adjust high temperature in accordance with furnace and alloy to give a slight shine appearance.  
Precious alloys generally require the opaque temperatures to be fired 20°C lower.

Conforms to EN ISO 9693-1 & EN ISO 6872

Type 1 Class 1

Coefficient of thermal expansion 25°C-500°C 13.4

Glass transition temperature (Tg) 590°C

Metal Ceramic remains the restorative option of choice in many clinical situations. Despite its many advantages, compared to all ceramic it can appear dull and lacking in vitality. **enliven MC** is a new metal ceramic material built from the ground up to be brighter and yet be easy to use, avoiding the requirement for complex multi-layering in order to achieve internal brightness and depth to the crown. **enliven MC** really does take the grey out of metal ceramic restorations.

The manual that follows explains how to achieve perfect shades A1-D4 and enigmalive bleach shades BL2 and BL3 even when dentine thickness is only 0.5 to 0.7mm. It explains how layering has been simplified, a beautiful new halo effect created and how shoulders, when required, only need one additional powder to achieve all shades. Creating natural ceramic gingival is also no problem with a combination of powders and stains. Even the stains are creative with both powder and paste stain consistencies achieved using two special liquids.

**Unifire® technology speeds up the workflow in the busy laboratory. It enables all firings except the opaques to use the same firing cycle.**

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## Framework Design, Alloy Preparation

### Attention before you start.

Alloys: Non Precious, Semi Precious and Precious alloys with a coefficient of expansion between  $13.8 - 14.9 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$  may be used. Design the framework to fully support a maximum of 2-3mm layered ceramic.

Follow the Alloy Manufacturer's recommendations for Pre Ceramic preparation. These may include:

1. Use only specified bur types for finishing each alloy. Keep burs separate, do not cross contaminate burs with other alloys.
2. Micro blast using specified grain size and blasting pressures, use non recycled blasting compound.
3. Ensure the microblasted copings are cleaned thoroughly. Carefully steam clean individual copings to remove embedded blasting compound. Some manufacturers recommend cleaning in distilled water in an ultrasonic cleaner for 10 minutes.
4. Follow oxidation and degassing instructions. Some alloys may require the removal of the oxide after degassing.
5. Ensure the frameworks are completely dry before applying the 1st opaque.



Paste Opaque Application & Firing

**Opaque application:** Stir contents in the tub before each application. Apply a thin even layer completely masking the coping. When fired the surface of the opaque has a slight shine and partially covers the applied surface.

**2nd Opaque:** Apply a thin even layer masking the 1st opaque. When fired the Opaque has a slight shine.

**Tips:**  
*Always replace lid of tub immediately after use. If paste has started to dry out (thickened) add one drop of **enliven** Regeneration Liquid and mix thoroughly to restore consistency.*

*Only place unfired ceramic onto the furnace firing table when the base start temperature has dropped to below 450°C.*

*To obtain the correct visual appearance of the fired opaque, the high temperature may require adjustment. Increase or decrease in 5-10°C increments until the correct appearance is achieved.*

*Steam vapours seen during drying is a sign that the ceramic has been heated too quickly. If this occurs cancel the programme, allow to cool, and wash off the last opaque application. Re-apply the opaque ensuring the correct start temperature is shown before positioning your work onto the firing platform.*



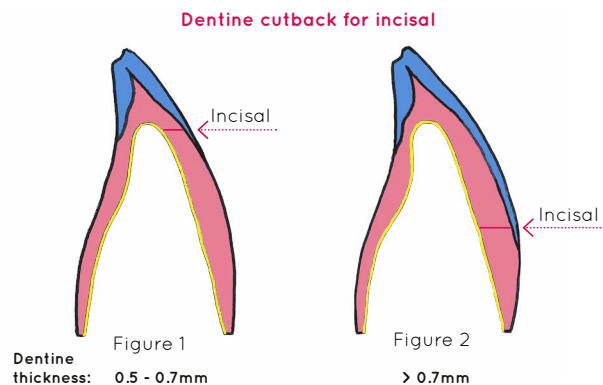
	Start Temp	Minimum Drying Time	Temp Rise °C/min	Vacuum °C/min (720mm Hg)	High Temp	Hold Time Air	Appearance
1st Opaque Firing	450°C	8 minutes	80°C	Yes	980°C	1 minute	Slight shine
2nd Opaque Firing	450°C	6 minutes	60°C	Yes	950°C	1 minute	Slight Shine

## Dentine Build Up & Incisal Cutback

Use **enliven** Dentine Liquid for building up. It enables accurate shaping and stability.

Starting from the cervical margin build up the dentine to full contour and reduce for incisal layering see figures 1 and 2.

Model the incisal edges according to age and wear characteristics of the individual case.



Incisal Application & 1st Firing

Layer the incisal as shown in figures 1 and 2 on previous page. When space is limited (0.5 - 0.7mm) do not take incisal past point shown on figure 1. When space is greater than 0.7mm, incisal should cover more of the dentine as shown in figure 2.



	Start Temp	Minimum Drying Time	Temp Rise °C/min	Vacuum °C/min (720mm Hg)	High Temp	Hold Time Air	Appearance
Firing cycle*	450°C	6 minutes	60°C	Yes	930°C	1 minute	Textured slight sheen

\* Cooling cycle in accordance with instructions of the alloy manufacturer. Higher coefficient alloys may require slow cooling.

Small Corrections & 2nd Firing

Small corrections and glaze may be fired at the same time.



	Start Temp	Minimum Drying Time	Temp Rise °C/min	Vacuum °C/min (720mm Hg)	High Temp	Hold Time Air	Appearance
Firing cycle*	450°C	6 minutes	60°C	Yes	930°C	1 minute	Textured slight sheen

\* Cooling cycle in accordance with instructions of the alloy manufacturer. Higher coefficient alloys may require slow cooling.



Characterisation, Stain & Glaze Firing

When further corrections or characterisation are required, first use a bur to prepare the surface and then a soft brush to clean it under running water. Dry the restoration. To verify the shade apply a thin wash of **enliven** Glaze & Stain Liquid.



Application of glaze

To self glaze just fire in the furnace with any additional corrections at 930°C.  
For a higher glaze use **enliven** Glaze Powder mixed with **enliven** Glaze & Stain Liquid, 870°C to 930°C depending on level of glaze required.

	Start Temp	Minimum Drying Time	Temp Rise °C/min	Vacuum °C/min (720mm Hg)	High Temp	Hold Time Air	Appearance
Firing cycle* - self glaze	450°C	6 minutes	60°C	Yes	930°C	1 minute	Glazed
Firing cycle* - higher glaze with glaze powder	450°C	6 minutes	60°C	Yes	870 - 930°C	1 minute	Glazed

enliven Universal Stains

These may be used either as powder or paste stains depending on the liquid chosen. Commonly used stain shades may be pre-mixed and stored on a closed tray whereas less common shades need only be mixed when required and so have an extended shelf life.

**Use of enliven Universal Stains as powder stains**  
Mix the **enliven** Universal Stain with **enliven** Glaze & Stain Liquid and apply in the normal manner.

**Use of enliven Universal Stains as paste stains**  
Mix the **enliven** Universal Stain with **enliven** Paste Stain Liquid and apply in the normal manner.



enliven Universal Stains colour chart

White 1	Yellow 2	Peach 3	Orange Brown 4	Dark Brown 5
Light Pink 6	Blue 7	Grey 8	Dark Pink 9	Blue Pink 10
Violet 11	A	B	C	D

	Start Temp	Minimum Drying Time	Temp Rise °C/min	Vacuum °C/min (720mm Hg)	High Temp	Hold Time Air	Appearance
Firing cycle*	450°C	6 minutes	60°C	Yes	930°C	1 minute	Glazed

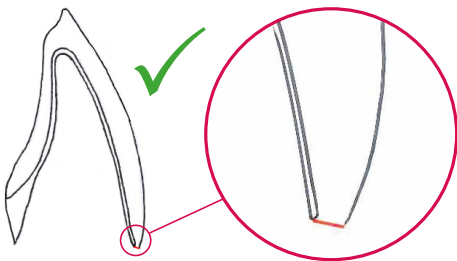
\* Cooling cycle in accordance with instructions of the alloy manufacturer. Higher coefficient alloys may require slow cooling.

Shoulder Application

Isolate the gypsum die using the Schottlander Ceramic Separator Pen.  
Allow to soak for 1 minute and repeat.

Apply a very fine bead of **enliven** Shoulder Opaque Margin to seal the marginal fit.

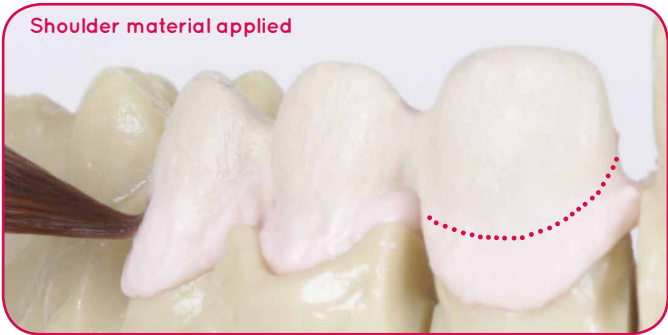
Carefully remove from the die, place onto a firing stand and fire. To build a shoulder in the **enliven** MC System there is no need for a different shoulder powder for every shade. Just add one part of the **enliven** MC Shoulder Stabiliser to four parts of the **enliven** MC Dentine shade concerned. Then build the dentine and incisal over the top (see pages 4 & 5) and fire altogether at 930°C.



**CARE:** If a higher proportion of Shoulder Stabiliser is used then fire the shoulder separately at 940-950°C depending upon proportion concerned.



	Start Temp	Minimum Drying Time	Temp Rise °C/min	Vacuum °C/min (720mm Hg)	High Temp	Hold Time Air	Appearance
Firing cycle*	450°C	6 minutes	60°C	Yes	930°C	1 minute	Textured slight sheen



Layering with Incisal Translucents

Position the chosen **enliven** Incisal Translucent colours over the dentine in the incisal third to match the patient prescription (see diagram).

**HINT.** To reduce the value of the crown apply a thin wash of dark grey or a mix of dark grey with enamel over the surface of the crown.

**enliven** Incisal Translucent colours:

Blue



Yellow

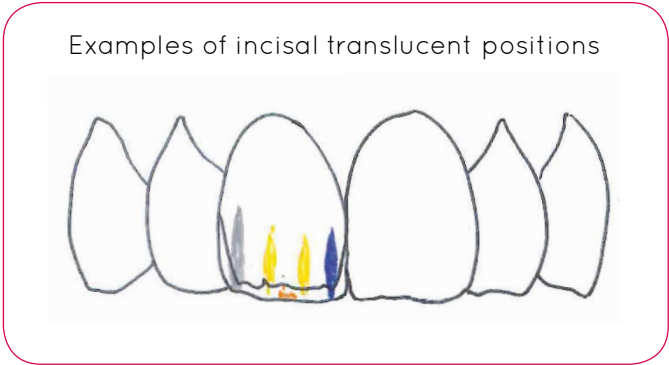


Orange



Dark Grey





	Start Temp	Minimum Drying Time	Temp Rise °C/min	Vacuum °C/min (720mm Hg)	High Temp	Hold Time Air	Appearance
Firing cycle*	450°C	6 minutes	60°C	Yes	930°C	1 minute	Textured slight sheen

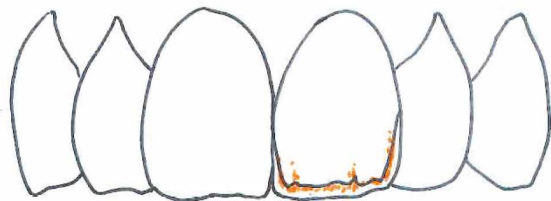
\* Cooling cycle in accordance with instructions of the alloy manufacturer. Higher coefficient alloys may require slow cooling.

Adding an Opal Halo

For a natural opal halo appearance the incisal edge is trimmed using a diamond disc to create an uneven edge. After brushing off under running water and drying, the opal halo is applied and extended to the incisal edge.

Regular incisal is overlayed with any minor adjustments.

Example of Opal Halo position



Preparing the incisal edge for opal halo



2nd Build up with minor adjustments including Opal halo and regular incisal added across incisal third



Opal Halo effect after firing



	Start Temp	Minimum Drying Time	Temp Rise °C/min	Vacuum °C/min (720mm Hg)	High Temp	Hold Time Air	Appearance
Firing cycle*	450°C	6 minutes	60°C	Yes	930°C	1 minute	Textured slight sheen

# Building Gingival Shades

The appearance of natural gingiva can be created with the use of **enliven** MC Gingival powders.

The gingival build up is usually layered after the 1st dentine firing and can be carried out with other minor adjustments.

See diagrams below as suggested layering guide.

Gingival G3 Base Pink is layered 1st and overlaid with Gingival G1 Surface Pink.

**enliven** Universal Stains are used to enhance the gingival shade as shown in the diagram below. Darker gingival shading can be reproduced by using complementary stain Orange Brown and Dark Brown. Further variations in shading may be reproduced using stains Violet, Light Pink, Dark Pink and Blue Pink as shown below.

**enliven** Gingival colours:

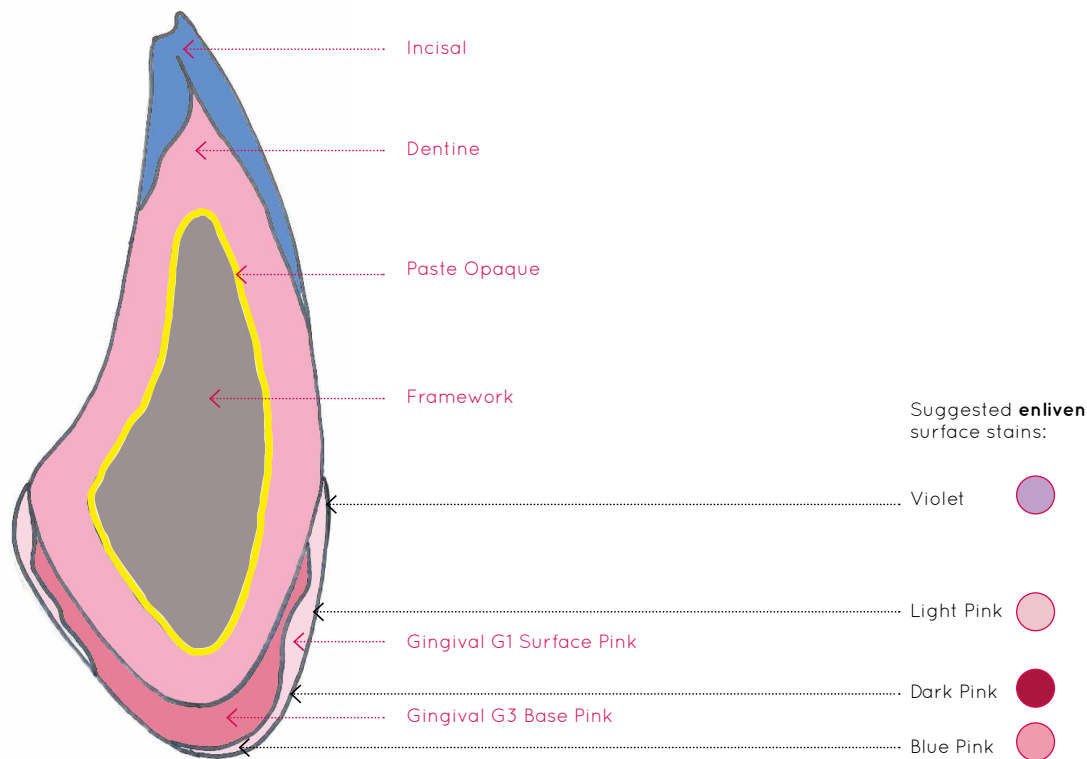
Surface Pink (G1)



Base Pink (G3)



Cross sectioned pontic showing **enliven** gingival powders & universal stain



enliven product selection chart

Shade	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4	BL2	BL3	
enliven paste opaque	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4	B1	B1	Pink
enliven dentine	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4	BL2	BL3	
enliven incisal	IN1	IN2	IN3	IN3	IN3	IN1	IN1	IN3	IN3	IN3	IN2	IN3	IN3	IN3	IN3	IN3	IN1	IN1	Opal Halo Clear Neutral

enliven additional powders

**enliven incisal translucents**  
IT1 Blue, IT4 Yellow, IT5 Orange, IT9 Dark Grey.

**enliven shoulder powders**  
Shoulder Opaque Margin, Shoulder Stabiliser.

**enliven gingival powders**  
G1 Surface Pink, G3 Base Pink.

**enliven stains**  
White 1, Yellow 2, Peach 3, Orange Brown 4, Dark Brown 5, Light Pink 6, Blue 7, Grey 8, Dark Pink 9, Blue Pink 10, Violet 11, A, B, C, D.

**enliven glaze powder**

enliven liquids

**enliven liquids**  
Dentine Liquid, Glaze & Stain Liquid, Regeneration Liquid for Paste Opaque, Paste Stain Liquid.

Physical Properties

Coefficient of Thermal Expansion (25°C-500°C) 13.4 10<sup>-6</sup> K<sup>-1</sup>  
Glass Transition Temperature Tg 590°C  
Solubility g/cm 2 16  
Density g/cm<sup>3</sup> 2.52  
Flexural Strength > 80MPa  
Median Grain Size D 90% 60

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Dentistry is becoming more technically demanding as materials and techniques become more sophisticated, enabling improvements in patient care. At Schottlander we believe in continuing education and training as well as in providing technical support to our customers. Schottlander run courses at our purpose built Training Centre in Hertfordshire, and throughout the UK, as well as worldwide through our distributor network.

All Schottlander courses are listed on **[www.schottlander.com](http://www.schottlander.com)** or alternatively please contact the Schottlander Education & Events Coordinator on email: **[courses@schottlander.co.uk](mailto:courses@schottlander.co.uk)** or **Freephone 0800 97 000 79**.



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