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IPS e.max – First choice for perfect aesthetics

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When faced with any aesthetically challenging situation one of the first considerations is which restorative material to employ. In the past, all ceramic restorations have often been dismissed due to their lack of strength or maybe their disability to mask dark underlying colours. With the arrival of IPS e.max®, all ceramic restorations using this system can now become our first consideration. It only remains for us to choose which of the five individual components of the IPS e.max system to use.

It is clear that our international market requires much more from restorative materials than the promise of beautiful aesthetics. IPS e.max is one system to satisfy all our requirements. With the case being presented it was a relatively straightforward selection to use IPS e.max press (fig 1). The only possible complication may have been an



(Fig 1) Pre-operative view.

existing metal post and core. Should this not have been able to be replaced with Cosmo post then the IPS e.max Press HO (high opacity) ingot would have been selected. It is advisable to select the HO ingot for both central crowns as it is far easier to build colour equally from a uniform background rather than attempting to match colour from different ingot bases. The shade of the prepared tooth corresponds to the shade ND 2 (Natural Die Material No. 2) (fig 2). With the desired shade of the final restorations being A2 the background natural die colour can be virtually dismissed in this case, as it will only complement the final shade match. The wax frameworks are produced on the master

model ensuring there is enough support for subsequent layering of IPS e.max Ceram (fig 3 and 4). It is worth mentioning



(Fig 2) Shade determination of the prepared tooth with the natural die material shade guide.



(Fig 3) Waxing around zirconia post, importantly the pressing is extended into the coronal area.



(Fig 4) Waxing to full contour.



(Fig 5) IPS e.max Press copings once the reaction layer is removed, display superb integrity of fit.



(Fig 6) The sprinkle technique produces an even mechanical foundation layer.

that there may be a similarity drawn between IPS e.max Press and its predecessor IPS Empress 2. However, whilst they are both essentially lithium disilicate glass ceramic, that is where the likeness ends. IPS e.max Press, due to its unique manufacturing process, offers a flexural strength of 400 MPa, the highest strength available in a pressed ceramic ingot. Also the light handling qualities of this new glass ceramic are greatly improved. Infact, the ingot colours available truly complement its layering ceramic IPS e.max Ceram in such a way that shade matching is easily achieved.

For this case the IPS e.max Press MO 1 (medium opacity) ingot was chosen and after investing and burn out procedures, pressed using the EP 600 Combi press furnace. After pressing, careful sandblasting and removal of the reaction layer, the units show their typical integrity of fit (fig 5). It is so pleasing to achieve such accuracy with so little effort.

Figure 6 shows the foundation firing using what is now referred to as the sprinkle technique. This is performed by lightly applying the IPS e.max Ceram glaze liquid to the surface of the pressing, then sprinkling neutral enamel powder over the entire unit and tapping away the excess. Take care not to over-load the glaze liquid as this can lead to the powder congealing on the surface, resulting in a poor bond.

Figure 7 illustrates the characterisation layer. In this instance the body of the units were enhanced with IPS e.max Ceram shade whilst mesial and distal aspects were modified with the incisal shade material. The incisal shade material would only be used in this manner when the press frameworks are slightly oversized.



(Fig 7) Wash firing using a combination of shade and incisal pastes.



(Fig 8) One part Occlusal Dentine orange, two parts dentine used at the cervical margin and interproximal areas.



(Fig 9) Dentine layering using allround liquid.



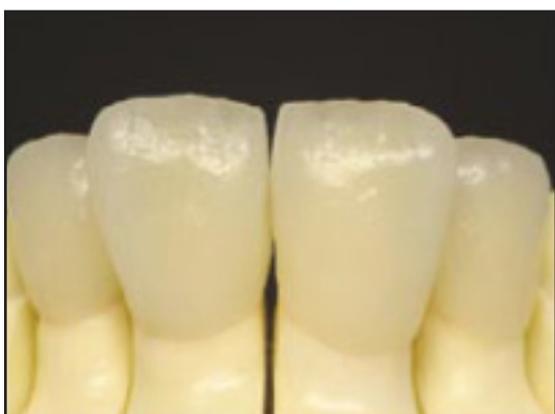
(Fig 10) Incisal table completed intermittently with Opal Effect 3 and the distal perimeters with Opal Effect 1.



(Fig 11) Opal Effect 5 is placed as a contrast.



(Fig 12) IPS e.max Ceram Essence material layered within the incisal third.



(Fig 13) IPS e.max Ceram – first firing.

Once these initial firings are complete, we can commence with the layering of IPS e.max Ceram. The low fusing nano fluorapatite glass-ceramic follows the Ivoclar Vivadent shade concept and enables the user to construct highly aesthetic restorations on whichever chosen IPS e.max framework.



(Fig 14) Enamel screen edition using one part Opal Effect 1, one part Transpa.



(Fig 15) Completed restorations Incisal 1.



(Figs 16 to 18) Restorations two weeks after fitting.

The initial layering as shown in Figure 8 is two parts A3 dentine modified with one part occlusal dentine orange. Its purpose is to block light in the interproximal areas. The IPS e.max Ceram Modelling Liquid Allround has been used during build up as this is perfect for enabling precise layering of internal colours (fig 9). A combination of Opal Effect powders 1,3 and 5 are laterally segmented across the labial surface and as illustrated in Figure 10 to 12 flecks of essence colour can be layered directly into the unfired ceramic. The IPS e.max Ceram Essence powders are intensively coloured and if layered as shown should be used in very small quantities.

The fired ceramic exhibits a uniform shrinkage (fig 13). The final layering consists of one part Transpa Incisal to one part Opal Effect 1 (fig 14). In order to produce a higher surface lustre the restorations are glazed and then polished with fine synthetic pumice (figs 15 to 18).

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1. What are the five basic components of the IPS e.max system?

2. Which IPS e.max press ingot should be selected when attempting to mask a discoloured preparation?

3. What is the first layer of ceramic applied to the pressing after removal of the reaction layer?

4. What is the purpose of modifying dentine with occlusal dentine in the interproximal areas?

5. IPS e.max ceram is what kind of ceramic?

6. IPS e.max ceram essence powder can be used?

a) internally in unfired porcelain

b) externally as surface stain

c) mixed with other ceramic colours to modify them

d) all of the above

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