

Replicating Nature

Using 3-D ceramic stains and a single-body porcelain from GC America to mimic the natural tooth.

By Joshua Polansky, BA, MDC

Mastering dental ceramics can be a complex discipline when one considers the number of powders that can be used in a polychromatic build-up. It could take years of practice to master any given porcelain system. Using fewer powders would certainly simplify the learning curve.

Now, that is possible with porcelain-over-metal systems like GC America's Initial IQ – One Body, Layering-over-Metal. It renders masterful results with the use of just one value-based powder and Lustre Pastes. This system works well if technicians concentrate on learning form and value, the most important variables in creating any natural dental restoration. Based purely on perfect form, one can create natural restorations with this one-powder system.

KEY TO SUCCESS

Continual practice is the key to mastery of any discipline—although it may seem tedious at first, it is an excellent way to learn how to replicate natural teeth. The author first realized the value of this exercise after converting macro photography of wax-ups to black and white and seeing how “alive” they looked (Figure 1 and Figure 2). After hundreds of attempts at copying the form of natural teeth in wax, he changed his working medium from wax to porcelain. Practice and photography helped to reveal aspects of natural tooth form that were not obvious at first glance.

By understanding form, one can apply other methods to compensate for sacrificing layers of porcelain. Deep

effects can still be achieved with GC's Initial IQ – One Body, Layering-over-Metal system. The goal is to trick the observer by using optical illusion and color theory (Figure 3). If one area of porcelain layering is sacrificed, it can be balanced by emphasizing other variables such as surface texture and color application. However, the technician must conduct an in-depth study of natural tooth form to adequately reproduce these areas. While observation of tooth form is most important, it is also essential to study tooth composition

and determine how best to apply the Initial IQ Lustre Pastes to create an effect that makes it look as if they were emanating from the tooth (Figure 4).

IMPORTANCE OF VALUE

Initial IQ – One Body, Layering-over-Metal is a value-based system. Value is the most important factor in achieving a color match intraorally (Figure 5). Instead of a 20-powder build-up, dental technicians can now use one powder. After the desired shade is selected, the tooth should be layered on a tissue to

help with moisture control (Figure 6). Typically, achieving the desired form requires two bakes. Once the natural tooth form has been achieved, the dental technician can work on the surface texture details that will make the restoration come alive (Figure 7).

After finalizing surface texture, it is time to apply the GC Initial IQ Lustre Pastes. It is important to review color theory when applying them to develop a nice palette (Figure 8). The key is to mimic the characteristics of natural teeth, ie, blue on the incisal edges, higher chroma in the cervical area, and consistent body color. The pastes should be applied evenly without leaving any streaks or blotches. Once the application is complete, a slight vibration will result in a nice, even finish (Figure 9).

After the Lustre Pastes are fired and glazed, the result should be a restoration that mimics nature in both form and color (Figure 10). While the final outcome may not be ideal for single central restorations, it is certainly an optimal choice for posterior work due

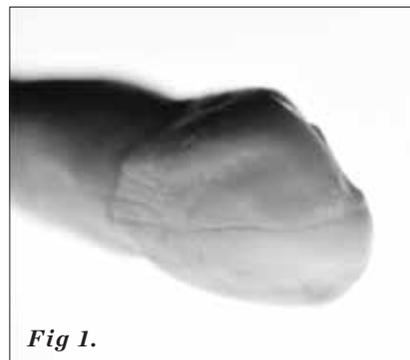


Fig 1.

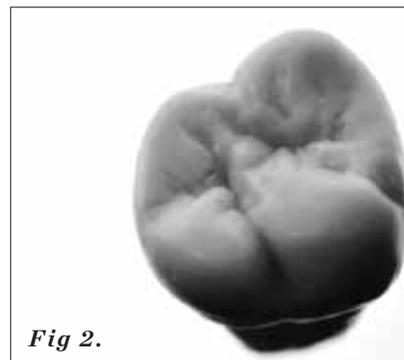


Fig 2.

Fig 1. and Fig 2. Observing wax-ups in black and white demonstrates the importance of form. Even without color, these restorations still appear vital and natural.

Fig 3. Optical illusions in dentistry can help the restorative process by tricking the eye into seeing what is not there.

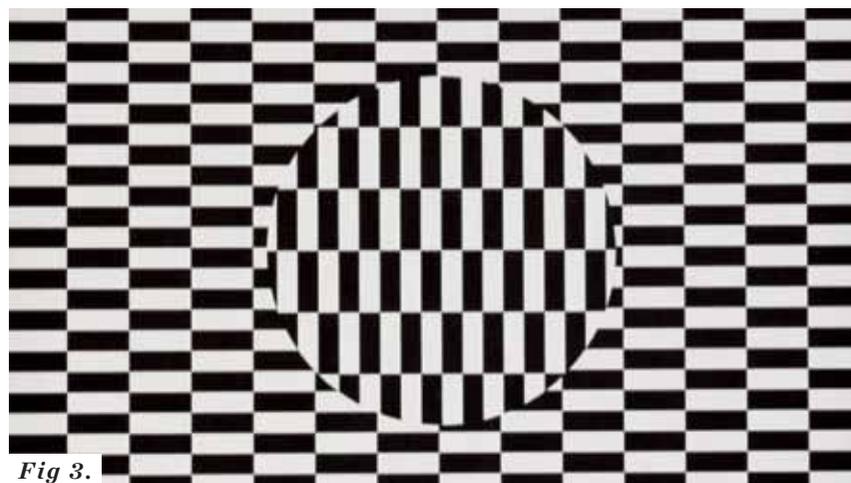


Fig 3.

to its ease of use, consistent results in shade and value, and easy learning curve (Figure 11). This exercise in studying nature can help technicians hone their skills for complex ceramic systems and aid in the attempt to re-create nature (Figure 12).

For the technician committed to practice, this exercise eliminates much of the complexity of creating natural restorations. It also saves time and money training technicians in the lab and cuts down on material costs.

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Fig 4.

Fig 4. The technician must have a firm understanding of the colors within teeth to re-create them with Lustre Pastes alone.

Fig 5. Form and value are consistently ranked as the top two factors in achieving success in restorations.

Fig 6. After the desired shade is selected, the tooth should be layered on a tissue to help with moisture control.

Fig 7. Detailed surface texture will add another realistic variable to the final outcome.

Fig 8. Knowledge in color theory will aid in the placement of colors to mimic shade.

Fig 9. After Lustre Pastes are applied, a subtle vibration will help distribute the material to leave no slumping or blotches.

Fig 10. When the restoration is complete, it must embody natural aspects when observed at every angle.

Fig 11. Although anterior work requires more detail and will most likely require polychromatic, multi-powder build-ups, GC's Initial IQ - One Body, Layering-over-Metal is ideal for posterior work.

Fig 12. Once these exercises have been mastered with one-body concepts, they can also be applied to other Initial IQ systems to master the more complex build-up.

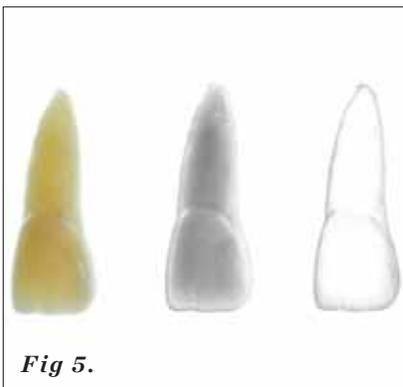


Fig 5.

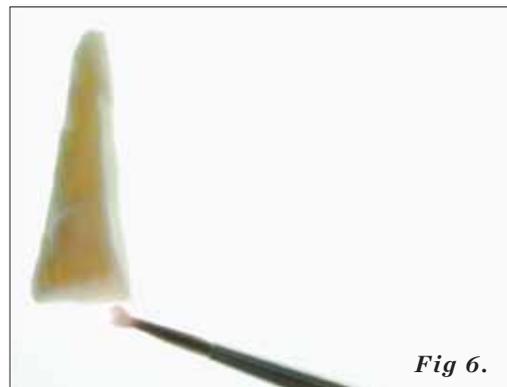


Fig 6.

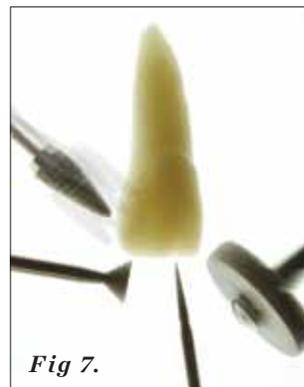


Fig 7.



Fig 8.

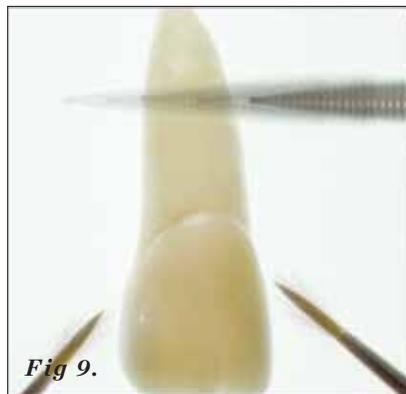


Fig 9.



Fig 10.

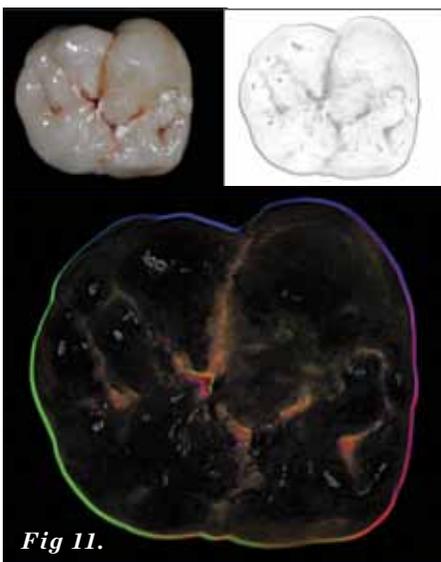


Fig 11.



Fig 12.