

SHADE MATCHING MYSTERY..SOLVED!



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INTRODUCTION

One of the first things a technician must consider during custom shade matching is internal (prep) color. Dark color or a post core will especially need to be checked before making a material choice. Without this information we won't be able to get a good custom shade match simply because we won't know exactly what we are covering, and where. For instance, after preparation, the stump color may be variable at the gingival and incisal level, leading to different porcelain layering techniques for each segment of the crown.

Remember, when a doctor asks us to make a crown in the color of A1, we make an A1 crown. Clinicians use traditional shade tabs which are monochromatic in color, and not realistic, because they haven't been offered anything better. Do you find that an A1 crown matches with natural teeth in the mouth after cementation? In my experience, most of the time, it doesn't. Given a 5 mm composite material shade tab, but a crown made out of ceramic and glazing material, the two will not match in color. They can't because the materials used to make them are different.

In addition, following a prescription for a simple A1 crown will guarantee that our restoration will not look natural. That's why I researched the subject for two years, keeping careful notes on my custom shade patients and, with my findings, put together the communication tools I now use daily. First, I had to fabricate the 150 zirconia restorations, each with a different modification that I had researched. Then they had to be organized by category, and photographed. Those materials were then made into the guides presented here.

AUTHOR SOLUTION

So here is my own method of trying to solve these shading issues.

I reflect on the color of the patient's adjacent teeth. What if it's not a color that I can create using a single GC IQ Lustre Paste stain? If this is the case, I'll have to mix some colors and try to achieve a third - one that matches with the patient's own. It could be that I will have to experiment a little bit to get the results that best mimic her shade, but this is where my experience and memory come into the picture.

What about surface texture? This will have a relationship to the internal color of the crown, as well. It has to be considered an important part of the final outcome so I always pay close attention and note what

it is.

But before I can do anything, I need to have definite steps to follow, a product I can count on and the tools to make it all come together. I can then confidently get started on reproducing what I see in the patient's mouth. My equation goes something like this:

Experience + Good tools (GC America IQ Lustre Pastes, shade matching guides) =
Best Color results

CASE STUDY #1

Initially, we need to check the stump shade for tooth #9, and note that it is a post core (fig. 1). My Simple Enamel and Prep Color Guide simplifies this step of the shade taking process by providing a code we can all recognize. Next, using my Chair Side Shade Selection Guide, I check for anterior horizontal lines (fig.2). In this case, the modification is AH-1 or White Band plus Mamelon.

My next step is to decide which three GC Initial Lustre Pastes to mix together for this patient's color (fig. 3) and then proceed to combine them well (figs. 4, 5) and apply as my internal color. I next layer the opal effect for translucency color (fig. 6) and then create chroma for the gingival color (fig. 7).

The coping is fired in the oven at 780_ C (fig. 8) and then after firing it's placed on the cast model (fig. 9). The next step is an application of GC Initial ZR porcelain (fig. 10) after which I created tooth morphology and subtle texture using a marker (fig. 11). A side view of the finished restorations in the mouth (fig.12) demonstrates the harmony of the color. Finally, a forward, retracted view (fig.13) gives the full effect of the blended porcelain layering techniques.

CASE STUDY #2

Pre-operatively, this patient, a heavy smoker, would soon be prepped for a crown on tooth #26 (fig.14). In order to recognize the internal color involved, I created a hand-drawn shade map for the incisal edge (fig. 15). It has occurred to me that our porcelain layering techniques can be compared to the layered coloring that we find when we cut open a red onion (fig.16), pictured here.

Heavy smoking has caused the patient to have dark orange-brown occlusion staining in the anterior edges (fig. 17) which the Chair Side Shade Selection Guide covers with an AIS-2 – Orange (fig. 18) code. A stump color check with the Simple Enamel and Prep Color Guide shows it to be bright except at the gingival (fig. 19), code APC (After Prep Color) - 6. A photo of the LSK Simple Enamel Guide com-

munication tool is shown in (fig. 20).

My recipe for GC Initial IQ Lustre Paste is slightly different this time compared to Case #1 (fig. 21) but I still mixed together several colors in order to achieve the effect I was looking for. On the cast model, the restoration awaits its final color application (fig. 22), GC Initial Invivo ochre stain to give the occlusal edge its brown-orange tone noted above (fig. 23). In the bisque bake stage, texture and mamelon is drawn onto the restoration (fig. 24). The mirrored image of the crown is reflected on the dark surface (fig. 25) with an occlusion view, in the mouth, to follow (fig. 26). The last photo is a retracted view of the restoration in the mouth (fig. 27).

CONCLUSION

Have you found yourself trying to solve these communication issues? Do you ever wish that your work would reflect the characteristics you see when your patients come for a custom shade?

Over time, and after carefully noting my experimentation with colors, I have found that, given the right product and the proper tools, I can create the kind of restorations I'm proud to call mine. They are my brand, and when I see them in patient's mouths, I'm happy that they look natural and life-like.

They said Ford couldn't create an assembly line that would produce cars. But he did it. Why can't we break down our formula for creating restorations in the same way? We can, with the proper tools!



Fig 1. **Case #1**-Initially, we checked the stump color with the Simple Enamel and Prep Color Guide on tooth number 9 and found it to be a post core shade.



Fig 2. The next step is to check for the proper amount of translucency with the LSK Chair Side Shade Selection Guide.



Fig 3. Several of GC America's Initial IQ Lustre Pastes are pictured here.



Fig 4. In order to achieve the best internal color for the restorations, the luster pastes are mixed together thoroughly.



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Fig 6. Opal effect is applied for gingival color.



Fig 7. Chroma is created next for gingival color.



Fig 8. The coping is fired in the oven at 780_ C.

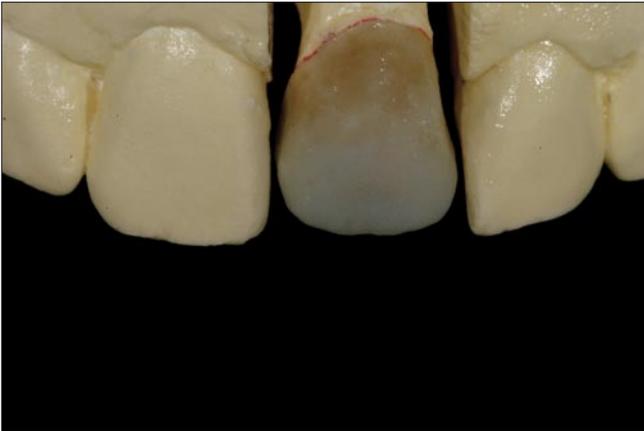


Fig 9. After firing, the coping is placed on the cast model.

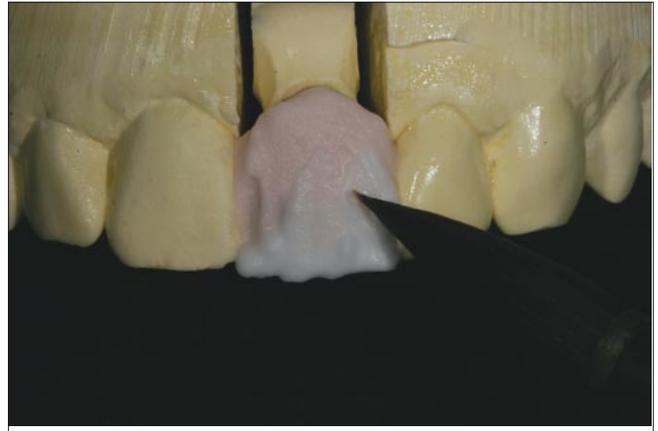


Fig 10. GC Initial ZR porcelain is next layered onto the coping.



Fig 11. Using a marker, the author draws the tooth morphology and subtle texture onto the restoration as a final step.



Fig 12. The patient's crown is cemented and a side view photo is taken to demonstrate harmony of color.



Fig 13. Finally, a forward view, post-cementation.



Fig 14. **Case #2**-Before preparation, #26 is shown in the patient's mouth.

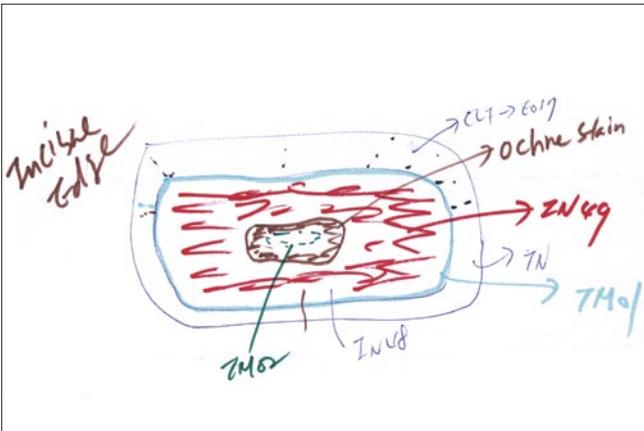


Fig 15. The author drew a shade mapping guide for the incisal edge.



Fig 16. A red onion, cut in half, will display the same layering effects as a technician's porcelain on a restoration.



Fig 17. Pre-operatively, the author noted the patient's staining due to heavy nicotine use.



Fig 18. The anterior edge of the tooth mimics Orange, or AI2, using the LSK Chair Side Shade Selection Guide.



Fig 19. The stump color is bright except at the gingival level, when compared with the Simple Enamel and Prep Color Guide.



Fig 20. Simple Enamel and Prep Color Guide photograph.



Fig 21. For this case, a slightly different recipe is used with the GC Lustre Pastes but the results will be a restoration that matches.



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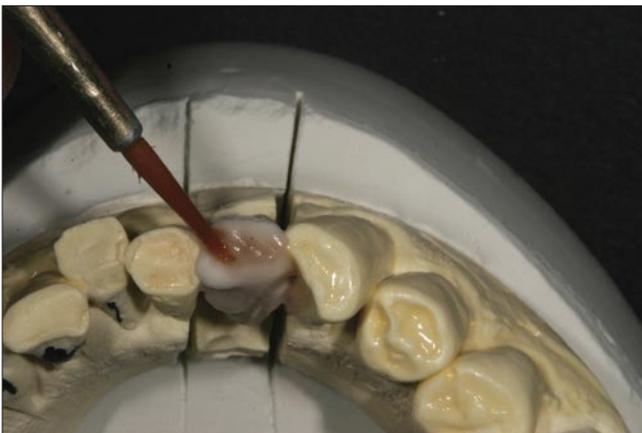


Fig 23. GC Initial Invivo stain is applied in ochre, a brown/orange tone.



Fig 24. The crown is shown in the bisque bake stage, with marker to guide the author with his tooth morphology and texture applications.



Fig 25. A mirrored image of the crown is next displayed.



Fig 26. An occlusion view in the mouth is taken next to demonstrate matching incisal edge.



Fig 27. Finally, a post-cementation view.