

# Shade Matching

## for Veneers with Predictable Shade Guide using Platinum Foil Technique



Fig 1: The veneers did not match with the adjacent teeth, being too yellow, too glossy and having no modification.

by Bruce Penniall, DDS with Luke Kahng, CDT

Many people who look at the photographs for this young lady's case will say, "That looks like a very difficult shade to match." And, in the author's experience, that seems to be the majority view when it comes to calcification cases. However, for the author, these cases are actually *easier* than a patient case with a lot of translucency. The main problem the author encounters with calcification has typically been that we don't all have the same tool to describe what we see, and therefore, it seems like it is tough to match the color.

In looking at these photographs, the correct assumption many of us will make is that this must be a young patient. Why? There are two obvious reasons: the rough surface texture and the white, chalky calcification – especially around the incisal edge area, but subtly covering the entire tooth. As technicians, we commonly think of this as the appearance for a young patient's teeth.

The technician has to match shape, contour, dull surface texture and a lot of white calcification for a patient with this presentation. So, how do we begin? The author's first step was to segment the teeth into four areas:

1. Gingival 1/3
2. Incisal 1/3
3. Mesial 1/3
4. Distal 1/3

If we look at the patient's teeth in this fashion, we see that there is not a huge color difference from one segmented area to the next. It helps to put the case into perspective and makes it easier to break down porcelain application for best matching results.

Still, there are several questions to be answered, such as: is the value high or low? What modifications will we make and where? How best to utilize the *Chair Side Shade Selection Guide* for this patient's case?

### Case Study

The patient's teeth, numbers 8 and 9, erupted with discolored and malformed enamel. At a young age, her dentist placed chair side composite veneers over the teeth, which held up well but were very thick and had become discolored. In addition, a portion of tooth #8 composite veneer chipped off in the mesial facial area, leaving an un-aesthetic appearance.

Her tissue condition was healthy and orthodontic treatment had been completed.

The clinician's post-orthodontic recommendations included tray bleaching, a zirconia crown on tooth #14 and new porcelain veneers on teeth 8 and 9. The patient accepted all recommendations. Her concerns regarding the new veneers were, as follows:

- A natural appearance to replicate the shading of her adjacent teeth
- Durability
- Longevity

In considering the veneer treatment, a wax-up was not necessary for this patient because the teeth had been ideally positioned orthodontically. After a full veneer prep with incisal lapping and .5 sub-gingival preparation, the clinician used 3M ESPE Impregum Penta Soft Quick Step for impression taking. Temporaries were formed using a B-1 shade and cemented with Rely-X Veneer cement, WO shade try-in paste to replicate the shade of the permanent cement.

The patient was instructed to call the laboratory to schedule a custom shade after veneer preparation.

### Laboratory Perspective

If, during a custom shading appointment, a patient is presented with the option of adding calcification to her restorations, she will sometimes decline, even if it does match her existing dentition. Based on custom shading taking experience, the author has found that patients don't always want to mimic this characteristic (Fig. 1). But, as a match, there were several problems with the current veneers: they were too yellow, too glossy in appearance and had no calcification modification. They needed to be brighter in color, duller in texture and modified to reflect the patient's calcification.

There is a special section in the author's new shade guide especially for Anterior Staining (Fig. 2). The four possible characteristics include: rough texture with white calcification all over, incisal and body, incisal only or thick, chalky white. With this tool in hand, it becomes easy to communicate calcification between dentist, patient and technician to accurately duplicate a patient's color.

The lateral edge of tooth #7 is close to the anterior stain shade tab AS-1 (Fig. 3), which tells us this patient has white calcification with more chalky white solid color at the incisal 1/3. The gingival 1/3 has subtle white staining and the body area faint white staining. When we break the tooth down into these three sections, we will also notice that the middle area is slightly pink. This color cannot be found with a traditional shade tab and a B-1 bleaching tab did not match, either. To solve this problem, we blended light grey, bleaching color and pink powders together, which proved to be a correct color match.

The clinician's veneer prep followed proper design (Fig. 4), a deep chamfer edge with .5mm thickness. GC Initial Porcelain (Fig. 5) is an incredible tool for technicians who, with proper layering technique and a beautiful prep like the one in Fig. 4, can produce striking restorations. With the exact build-up of the porcelain powder (Fig. 6), the technician was able to create a multi-colored veneer with lifelike, natural dentition, exactly what the patient was looking for. The final modifications, layered onto the top of the porcelain, conclude the process (Fig. 7).



Fig 5: GC Initial Porcelain powder



Fig 2: The Chair Side Shade Selection Guide has a special selection that details unique characteristics for anterior staining.



Fig 3: The chalky white edge of #7 is close to the guide's shade tab AS-1.



Fig 4: The veneer prep follows proper guidelines for best aesthetic results.



Fig 6: The porcelain build-up creates a multi-colored, lifelike veneer.



Fig 7: Modifications to the build-up conclude the process.

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Fig 8: For demonstration purposes, the author built up just half of the veneer to reveal the final bake effect.



Fig 9: The layering technique is demonstrated in a side profile view.



Fig 10: During a try in, the color and characteristics are checked.



Fig 11: In this side view, symmetry, emergence profile and contour are checked.

For demonstration purposes, the author built the porcelain onto only half of the veneer but did not complete the entire process (Fig. 8). On the model, the layering effect of the porcelain application is then demonstrated in a side view photograph, with the foil still intact on the other one-half of the veneer (Fig. 9). A try-in showed an excellent calcification and color match (Fig. 10).

There is slightly less calcification built into the crowns than we see in the adjacent teeth but for the sake of shade harmony, it had to be added into the final restorations. For emergence profile, symmetry and contour check, the patient's side view photo was taken (Fig. 11). A rest position photo follows (Fig. 12).



Fig 12: Final photograph – rest position.

### Conclusion

What is the best way to communicate special shade characteristics with your lab? Everyone has a preferred method but for the author, it's easiest to have one tool from which to work. If the doctor, patient and technician all communicate through the same method, there is little room for error, adjustments are fewer and there is less frustration all around.

In assessing the case, the clinician and patient were especially happy with the depth of the translucency and the natural appearance of the veneers after cementation. Contacts and function had been addressed. Everyone involved was pleased with the final outcome. ■

### Authors' Bios

**Bruce Penniall, DDS**, received his DDS from University of Illinois College of Dentistry. He currently practices in St. Charles, Illinois. He enjoys all aspects of general dentistry focusing on restorative and cosmetic dentistry. He currently resides in Elburn, Illinois, with his wife and four children.



**Luke S. Kahng, CDT**, is the owner of LSK121 Oral Prosthetics, a dental laboratory. He has published more than 35 articles in major dental publications. He is the author of the recently published *Anatomy From Nature*, with 50 illustrated pages of full contour wax-ups, stone models and porcelain teeth, all re-created using natural teeth as a guide. His new *Esthetic Guide Book* features 31 patient cases from a single anterior tooth to a full mouth reconstruction. He invented the Chair Side Shade Selection Guide featuring more than 150 zirconia fabricated restorations based on patient enamel and translucency research, with patent pending.

