

# Behind the Story: Anterior Shade-Matching Mamelon Used from Bench Side

Rick Alwan, DDS; and Luke Kahng, CDT

There are multiple opinions about the best way to take a custom shade. After seeing about 10 patients a month for the past decade or so, the author has developed a system that works best for him. Which area of the tooth does he notice first? Initially, he will see the dentin, then the translucency and enamel overlay, and, finally, he will check the mamelon. Memory does not always serve well when recalling a patient's special characteristics so the author relies on immediate photographs and custom shade documentation for best results. He has also noticed that beginning work on the patient's case the same day as the consultation will produce a better restoration. Why? Every individual trait about the teeth is fresh in his mind at that time, and will be re-created more accurately. Little characteristics become big when they are all put together, and without them, the crown will not match the adjacent teeth. Mamelon is one of those "little" characteristics that will define a person's shade; if it is incorrectly interpreted, the shade will be wrong.

The most common definition of mamelon is, "a rounded protuberance found on the incisal edges of newly erupted incisor teeth. Each tooth has three mamelons. They are soon worn down through normal attrition. Mamelons will remain if the teeth are malaligned and there is no opposing incisal contact, as in an open bite."<sup>1</sup> Most adults no longer have these mamelon protuberances because they wear away very quickly. For the purpose

of this case study, the author is calling mamelon the color differentiation at the incisal third and incisal edge of the teeth. This may not be the technically correct term for mamelon, according to the definition above, but it is the name the author commonly uses when referring to this color differentiation.

Mamelon is hard to create and especially hard to recapture after the patient is gone from the custom shading appointment. But once you begin to see it often enough, it requires less concentration to recreate mamelon because certain patterns will repeat themselves. There are aspects about mamelon that the author finds to be curious. For instance, mamelon cannot be dictated with one feature, such as opacity or translucency. But the underlying color is always there. To satisfy his interest in mamelon distinctiveness, he has spent a great deal of time duplicating natural mamelon by creating sample crowns that mimic natural teeth. This is the author's passion, to create multiple crowns with translucency and enamel, as well as with mamelon. His long-term goal has been to categorize these findings and document them for future work.

Like a problem in algebra, without a formula, we cannot solve it. Only if we are very lucky with porcelain technique can we mimic mamelon in a restoration without a porcelain formula. Remember, most patients are good teachers. Every case is different and can help us to perfect our individual technique and skill level. But patients cannot communicate

with us what exactly they are looking for, because they cannot describe details in clinical terms. That is one reason for this article: sharing information helps to expand and improve our individual technique. So let us begin by talking about the single anterior teeth in these two cases.

## CASE STUDY 1

To get a reliable reading on this patient's custom shade, the appointment took place 2 days after preparation, after removal of the provisional. This timeframe ensured that the patient was adequately hydrated (Figure 1). A mamelon shade check was performed using the LSK Chair Side Shade Selection Guide (Figure 2).

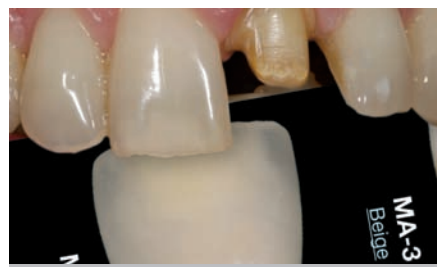
The author's mamelon formula samples (Figure 3) are photographed and categorized in the LSK Chair Side Shade Selection Guide™ (LSK121 Oral Prosthetics, Naperville, IL) along with many photographed samples of anterior translucency (Figure 4). By scanning the image of a tooth with a pencil drawing, a technician can see the color (Figure 5). The mastery of porcelain layering serves

to enhance duplication of natural teeth and the creation of the tan mamelon.

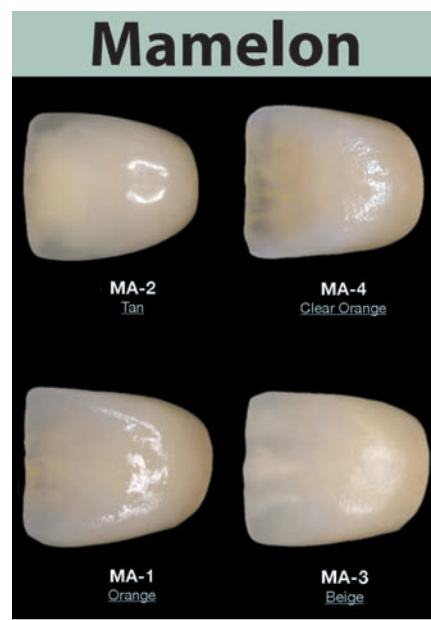
GC Initial™ cervical translucency porcelain was applied (Figure 6) as well as dentin enamel. After baking, the finished restoration was placed on the cast model to check the color differentiation (Figure 7). Three characteristics are noted: the clear dentin at the gingival, the gray band in the middle with translucency modifier,



**Figure 1** The custom shading appointment took place 2 days after preparation and removal of the provisional, so that the patient was completely hydrated.



**Figure 2** Shade and mamelon check with the LSK121 customized Shade Selection Guide.



**Figure 3** Zirconia crown samples of mamelon were created and photographed for the Chair Side Shade Selection Guide.



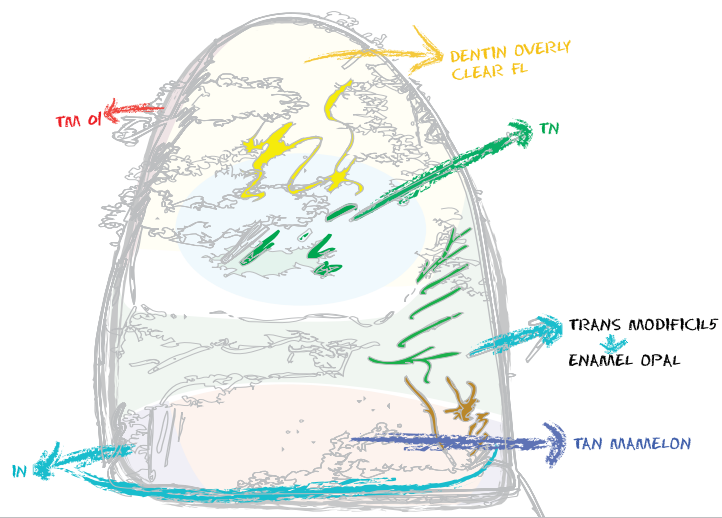
**Figure 4** Anterior translucency possibilities were categorized.



**Rick Alwan, DDS**  
Private Practice  
Naperville, Illinois



**Luke Kahng, CDT**  
Owner  
LSK121 Oral Prosthetics  
www.LSK121.com  
luke@lsk121.com  
Naperville, Illinois



**Figure 5** A computer scan gave the technician the color possibilities based on his pencil drawing.



**Figure 6** GC Initial™ porcelain cervical translucency dentin enamel was layered.



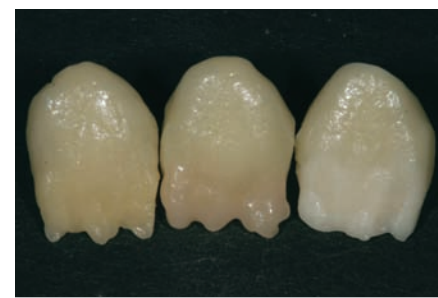
**Figure 7** On the cast model, the final restoration is shown to advantage.



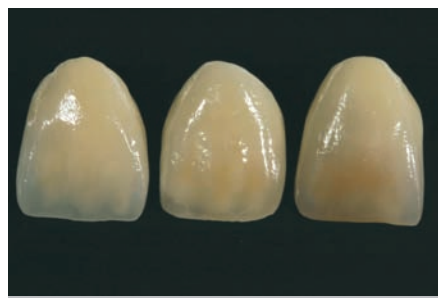
**Figure 8** Final retracted photograph after try-in in the mouth.



**Figure 9** Custom shade matching with the CT 24 Shade tab.



**Figure 10** Mamelon was applied with GC Flo dentin 93, 92, and 91 (left to right) to the sample crowns.



**Figure 11** After applying clear, incisal enamel to the sample crowns, the final mamelon appearance was different than with just the flo dentin effect.



**Figure 12** The bisque bake crown was tried in the mouth.



**Figure 13** The finished restoration was placed on a mirrored surface.



**Figure 14** The patient diastema was checked on the cast model.



**Figure 15** The finished restoration was tried in the patient's mouth.

and the tan mamelon at the incisal third. In the mouth, during an immediate try-in photograph, the crown was a match with the adjacent central tooth (Figure 8).

**CASE STUDY 2**

With a GC Initial™ CT 24 shade tab, the patient's color was matched after preparation (Figure 9) with a high-opacity mamelon. For sample mamelon effect, GC Initial™ flo dentin 93, 92, and 91 (Figure 10) were applied to these test restorations (left to right). After the application of clear, incisal enamel and baking, the final mamelon effect was different from the internal color effect (Figure 11).

The GC Aadva™ Milling Center crown was tried in the mouth (Figure 12) as a bisque bake. After finishing, the crown is shown on a mirrored surface (Figure 13) and then on the cast (Figure 14). The patient's diastema was re-created with this crown, as we can see in the final photograph (Figure 15).

**CONCLUSION**

To develop the formula for porcelain layering and creating mamelon, we have to understand what is beneath the surface. Tooth morphology comprehension leads to proper design, so that all that is left to consider is shape, contour, and color matching. With this in mind, we will better be able to match the patient's adjacent teeth.

A single-tooth custom shade match is complicated for everyone involved. Patient expectations are high and they do not really understand just how difficult it can be to match their adjacent teeth because of all the nuances of color and the special characteristics they possess.

**REFERENCE**

1. Rosenberg CL. *Plastic Surgery Secrets Questions and Answers Reveal the Secret to Successful Plastic Surgery*. Weinzwieg J, ed. Philadelphia: Hanley & Belfus; 1999:127.