

# The direct approach: Steps in composite shade selection to create the perfect composite restorations



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By Dr. Sigal Jacobson

Composite restorations have become an integral part of any restorative dental practice and can be called “star of minimal invasion” due to its conservative concept. Recent developments in composite resin considerably improved the physical and aesthetic properties, enabling practitioners to create aesthetic restorations with excellent longevity and with high patient’s satisfaction rate.<sup>1</sup>

Many dentists consider direct composite placement in the anterior region to be a somewhat challenging procedure. Some of these challenges include: creating the final anatomical landmarks and contours, selecting the precise blending shade of composite and polishing it to perfection. In addition, many composite manufacturers propose the multi-layering protocol that requires placing an assortment of opacities and translucent shades to create a natural polychromatic effect. In clinical situations, the layering techniques are somewhat complicated, time consuming and hard to replicate when restoring multiple teeth. As a result, many dentists give up on the layering protocols and search for methods and materials that are simple and involve using one or two shades of a composite only.

This article will outline some efficient methods to create natural looking direct veneers using a single composite shade and a unique composite template system, the Uveneer kit. At the end of the article readers will be able to implement a protocol for accurate composite shade selection for anterior direct restorations and create consistently blending results using a single shade of composite only.

## What is Uveneer

The Uveneer template system by Ultradent is an assortment of templates that simulate the facial shape and anatomical landmarks of anterior teeth.



Fig. 1

The kit consists of 32 templates from both arches premolar to premolar in two sizes and based on the conventional smile design rules and proportions therefore will fit most patients.<sup>2</sup> Each template is made of a thermoplastic material that is reusable and autoclavable.

The technique is simple: After applying composite on the facial surface of a prepped tooth and pressing the appropriate Uveneer template, one simple round of light curing after which the template is removed, produces a hard void-free restoration. Moreover, studies show that OIL (Oxygen Inhibition Layer) is softer and more susceptible to wear and stain.<sup>3</sup> With light curing through the template the formation of the oxygen inhibition layer is prevented, and a glossy, durable restoration is formed which will retain gloss and color over time.

## Composite shade selection in five steps

One of the main challenges of creating anterior restorations is matching the right composite shade to the tooth. This step is crucial and has a significant impact on the success of the restoration. There are a few factors that affect the final restoration shade.

- ◆ Appearance analyses indicate substantial variation between same shades from different brands. (Fig. 2)
- ◆ Different thickness of the same composite presents different shade and masking ability.
- ◆ The underlying tooth reflects on the composite and affect the final shade.
- ◆ A gray appearance of the composite can be caused by the projection of darkness in the oral cavity.<sup>4</sup>
- ◆ Light curing and polishing changes the final shade

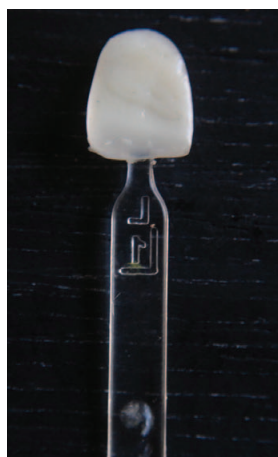


Fig.2: Same B1 shade from three different brands present different final outcomes

To overcome these challenges here are 5 essential steps to follow:

### 1: Keep it simple!

Spectrophotometry confirms that 90 percent of patients will present with an A hue. It is advised to reduce your composite inventory and avoid having unused shades in your armamentarium. The most common shades are A1, A2, A3, A3.5, A4, B1, bleach white and translucent shade.



**Fig. 3:** Apply composite into Uvener template



**Fig. 3.1:** Light cure and remove the cured composite shell from the Uvener



**Fig. 3.2–3.3:** Glue the cured composite to a wooden handle and mark the shade

**2: Divide your composites into roughly three groups according to the Value (low, medium, high)**

Value is the degree of lightness or darkness of the color material and is dictated by the transmission of light through and reflectance from the material. Our vision is more sensitive to differences in value more than hue and chroma. Different brands of composite with the same shade may present with variance in shade value, (Fig. 2) as each brand applies different filler particle sizes and different matrix composition and opaques.

**Low-value composites:** Exhibit a light-diffusion property similar to natural tooth structure, with excellent tooth-blending properties. Low value composites are recommended to fix small enamel chips,, Class V, and cases when maximum blending with no changing or masking of the underlying tooth structure is required.

Applying low-value composites in thicker layers may appear grayer in appearance. e.g. Clearfil Majesty Esthetic by Kuraray, Gaenial Universal Flow, GC America

**Medium-value composites:** Used in many aesthetic cases. When applied in approx. 0.5mm thickness or more, they can mask, and at the same time incorporate, a “chameleon” and blending effect. Many of today’s Nano-composites are present as medium value in which the masking ability is controlled by the thickness applied. e.g Vit-lescence by Ultradent, Admira by Voco

**High-value composites:** When used in a thin layer, present with high opacity and masking ability, less to no tooth blending capabilities. Used in cases where changing

the underlying tooth color is required with minimal tooth preparation e.g. Amaris by Voco, Gradia by GC

One brand can also incorporate all three groups in its range.

**3: Be familiar with your composites shade capabilities.**

It’s advisable not to change composite brands too often, as it takes time to get familiar with each one’s composite shade and value characteristics.

**4: Prepare your individual shade guides**

When selecting a composite shade to match a tooth, a common mistake is using a ceramic shade guide that’s fabricated from materials that differ entirely from the composites. Therefore, it is advised to create an individual, custom-made composite shade guide that will generate an accurate and realistic representation of the composites on hand. The composite shade guide should look as close as possible to the contours and gloss of the final result. (Fig. 3–3.3)

**5: Direct mock-ups**

Having the end result in mind before starting any case plays a significant role in the success of any aesthetic work. In that respect, a simulated direct composite mock-up without bonding it to the tooth is highly recommended as it takes the guesswork out of shade selection. Direct mock-up allows the dentist to effectively view the final restoration regarding shape and final shade. It is also a great communication tool with the patient on the final aesthetic result.

Shade selection mock-up should be performed on the same tooth you plan to work on, under a natural humidity (as dehydration brightens the tooth). It is also

recommended to aim to build the mock-up to the same thickness of the finished restoration. Once made into a realistic representation of the final result, remove it with the help of an instrument.

**Creating polychromatic direct veneers with a single shade**

It is a fact that teeth are polychromatic in appearance with a great variety of shades and nuances that are perceived and interpreted by the human eye. To mimic the natural gradient effect dentists learn to apply multiple composite shades in different areas of the tooth.

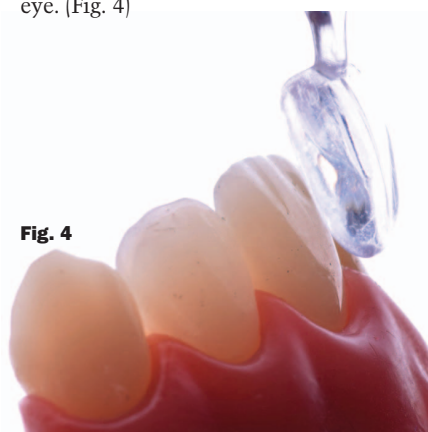
In reality, enamel does not present with different shades and is somewhat translucent and colorless. It’s perceived as polychromatic because of the reflection of the dentin through different thickness of enamel in different areas of the tooth.

It is also known that a single shade composite of various thicknesses will present with a significant difference in chroma, value and masking capabilities.<sup>7,8</sup>

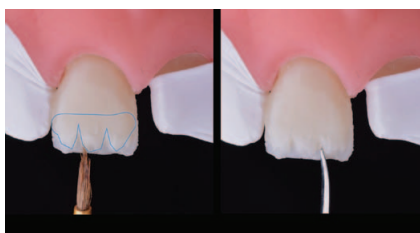
Due to the precise anatomical contour and the convex shape of the template, by pressing on the composite with a Uvener and curing it on the tooth results in different thicknesses of composite in various areas of the tooth (less toward the incisal third and gingival areas and greater in the middle of the facial surface) resulting in a natural gradient effect using a single shade of composite.

Another benefit of using a template is the embedded surface morphology reflections within the template have a significant influence on the final reflection of light. The “perceived” shape, length, and width of an anterior tooth is significantly influenced by the specular reflections coming from the surface morphology, heights of contour and line angles of the buccal surface.<sup>9</sup>

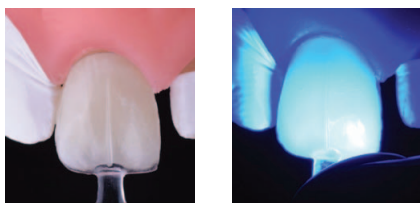
By pressing a tooth-shaped mould upon a composite resin, a 3D shape with an anatomical landmarks of a natural tooth is formed, this will affect how the light will reflect back and perceived by the eye. (Fig. 4)



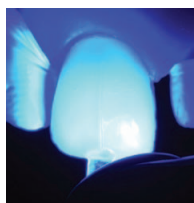
**Fig. 4**



**Fig 5-5.1:** Creating lobes in the dentin shade composite without curing yet



**5.2:** Apply translucent high fill flowable composite or any enamel shade composite onto the Uvener template



**Fig. 5.3:** Press the template on the tooth, cure and remove template



**Fig. 5.4**



**Fig. 5.5:** Result after removing the excess from the periphery with a polishing burs and polishing discs

Photos 5-5.5 courtesy of Dr. Mauricio Jegerlehner & Dr. Jorge Flore, Guatemala

### Creating an incisal translucency effect

In some cases, more pronounced incisal translucency is required. In such scenarios, it is recommended to apply any shade on to the tooth, then cut into the incisal uncured material into three lobes and add enamel layer into the Uvener template and combine it together and then cure. (Fig. 5-5.5)

### Summary

Dentists need to be open-minded to new techniques while preserving the tooth structure, use common sense and rely on evidence-based dentistry. This recent product development, Uvener by Ultradent, together with the advanced contemporary composites, make it now possible to create predictable natural results every time while using a single shade or two shades of composite only.

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### About the author

Inventor and a dentist, **Dr. Sigal Jacobson** is an internationally acclaimed lecturer with more than 23 years of experience in aesthetic dentistry. She is named one of this year's top 25 women in dentistry in the USA at the prestige DPR magazine. Dr Sigal published several articles in major dental magazines and invented the world renowned Uvener™ system. She lectures globally on the subject of composite aesthetic restorations and minimally invasive dentistry that rely on adhesion for retention. She is a key opinion leader and speaker for few major dental companies.

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