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- Flexibility of using a cutback and layering technique for veneer fabrication
- Enhanced color, clarity, and strength
- Leucite crystal distribution for improved strength and superior optical properties
- Can be used with a traditional staining technique for veneers, inlays, onlays, and full-coverage crown restorations

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**Ivoclar Vivadent Inc.**  
www.ivoclarvivadent.us.com  
email@ivoclarvivadent.com

**U.S.**  
175 Pineview Drive  
Amherst, NY 14228  
800-533-6825

**Canada**  
2785 Skymark Ave. Unit 1  
Mississauga, Ontario L4W 4Y3  
800-263-8182

# Cut-back, layering

## Fabricating IPS Empress Esthetic restorations for minimally reduced anterior dentition

By Nelson Rego, CDT, Dentistry by Dr. Thomas Teel. Information provided by Ivoclar Vivadent Inc.

**W**ith the variety of all-ceramic systems on the market from which technicians and their doctors can choose, it's inevitable that misconceptions about the indications for all-ceramic materials and the clinical requirements for their use will develop. As an example, it's often been said that only certain all-ceramic materials enable the preparation of the teeth in a conservative, minimal reduction fashion.

However, dentition can and should only be prepared to the extent that the reduction ultimately enables the combined esthetic and functional requirements to be predictably achieved in the proposed restorations.

Following are step-by-step procedures for fabricating IPS Empress Esthetic restorations for minimally reduced anterior dentition using a flexible cut-back and layering technique.

**Case presentation**

A 21-year-old female patient presents for a consultation regarding her dislike of the tetracycline stains on her maxillary anterior dentition and their effect on her appearance (Fig. 1). A long-time patient of record, she had previously requested restorations to enhance her appearance but, given her age and concerns regarding the potential need for endodontics and the health of the pulp, the



**Fig. 1** Preoperative view of severely tetracycline-stained anterior maxillary dentition.

clinician recommended postponing restorative treatments until now.

A comprehensive examination is performed that includes radiographs, digital photographs, and study models. A diagnostic wax-up of the proposed restorations is made, and the patient approves a treatment plan that includes 10 maxillary IPS Empress Esthetic all-ceramic restorations.

The teeth are prepared with minimal reduction (Fig. 2). Specifically, reduction of all teeth averages no more than 0.5 mm. The patient is temporized with provisional restorations that mimic the shape, contour and length of the anticipated final restorations. Because the patient wants a nat-



**Fig. 2** A model of the preparations demonstrates the conservative nature of the reduction required in this case.



**Fig. 3** Wax-up based on the provisional restorations and the diagnostic wax-up was made at the laboratory.



**Fig. 4** Perform an aggressive cut-back to accommodate patient's request for characterization.



**Fig. 5** Layer a variety of Empress Esthetic effects powders onto the restorations to create a natural-looking incisal edge.



**Fig. 6** The amber and blue hues, applied to deliberate locations, appear natural and not too uniform.



**Fig. 7** The restorations after contouring in the putty incisal edge matrix, demonstrate the accurate position of the incisal edge.



**Fig. 8** Apply a final stain to the surface of the restorations prior to glazing.



**Fig. 9** The completed restorations on the model to verify color, contacts and contour.

ural look—one that would not produce a dramatic change—an ETC1 ingot is selected for the fabrication of the final restorations.

**Fabrication**

1. Design the wax-up to optimal function and esthetics (Fig. 3). Note: In this case, the patient-approved diagnostic wax-up, which is also used as the basis for her provisional restorations and Sil-Tech putty incisal edge matrix (Ivoclar Vivadent), is used for creating the final wax-up.
2. Sprue the wax-up, invest, and burn-out in the burn-out oven, and then press the ETC1 ingots into the molds.
3. Fit the ceramic to the dies, and adjust the contacts between the restorations.
4. Remove the sprues and verify occlusion.
5. Perform an aggressive cut-back to reduce the incisal edges of the restorations for teeth 7 through 11, as well as the mesial aspects of the restorations for teeth 6 and 11, in preparation for layering (Fig. 4). Note: Take care to maintain the shape of the final tooth form.
6. Build-up internal characterizations in the restorations. Specifically, to achieve a three-dimensional effect, layer some Empress Esthetic Amber, Translucent Incisal, and Effects (e.g., White Opal) powders to create a natural-looking incisal edge (Fig. 5).
7. Fire the restorations in an oven (Fig. 6).
8. Recontour the incisal half of the restorations to match the gingival half, verify occlusion, and check the overall length using the previously created putty incisal edge matrix (Fig. 7).
9. Achieve final surface characterization by applying stains, and glaze the restorations (Fig. 8).
10. Seat the definitive restorations on the model to verify fit, contacts, form, and color (Fig. 9).

Fig. 10 shows the completed restorations in place.



**Fig. 10** Postoperative view of the patient following placement of the definitive IPS Empress Esthetic restorations.

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