

# 20 TIPS for Resin



HOW

# Veneer Cements

## How to Choose a Cement for Porcelain Laminate Veneers

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### INTRODUCTION

The advent of etching enamel has given rise to the use of porcelain veneers as a relatively conservative means of improving the appearance of teeth. Since its introduction in the early 1980s, a number of techniques and product advances have been developed to assist clinicians in the restoration of the anterior dentition. Because most of these restorations not only lack the necessary retention or resistance of conventional restorations but they also typically are very thin (.3 to .7 mm), the selection of the cement is critical to success.

**The higher the translucency of the resin cement, the more natural the appearance.**



1-5



## CEMENT SELECTION >>1-5

1

It is preferable to use only light-activated resin cements. Light-only polymerized cements allow for longer working time, do not need to be mixed, have shorter finishing time, increased color stability, and longer shelf life.

2

Dual-cured resin cements contain amine co-initiators, whose byproducts in the catalyst may, over time, cause a "yellowing effect" to the veneer.

3

The higher the translucency of the resin cement, the more natural the appearance, whereas opaque cement will mask the tooth and make it more monochromatic. Opaque cements are more commonly used to block the darkness of severely discolored teeth.<sup>1,2</sup>

4

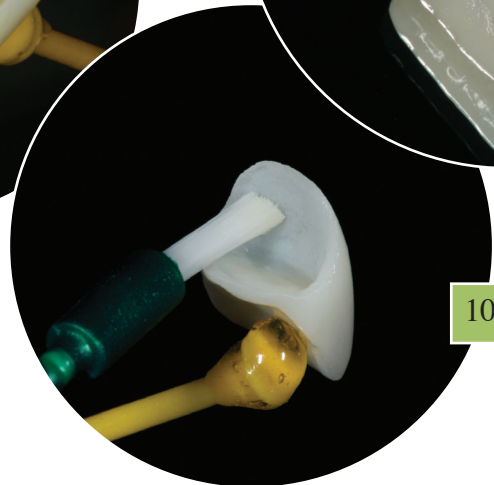
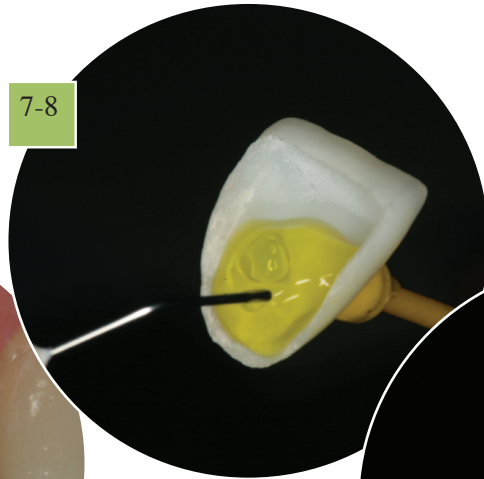
It is not recommended to refrigerate resin veneer cements; however, if they have been refrigerated, make sure that the cement is at room temperature or warmer, as cold temperatures might affect its pseudoplastic behavior, especially the opaque shades.<sup>3</sup>

5

Light-only polymerized resin cements can be used with virtually any etch-and-rinse adhesive, provided that the manufacturer's directions for both the cement and the adhesive are followed.

### VENEER PREPARATION >>6-12

6	7	8	9	10	11	12
<p>The greater the amount of cement spacer (greater than 100 micrometers), the greater the increase in internal stresses and the probability of veneer fracture.<sup>4,5</sup></p>	<p>Acid-etching with hydrofluoric acid is possible only with silica-based ceramics. Alumina and zirconia do not fall within this classification.</p>	<p>Make sure that the porcelain veneer is etched with hydrofluoric acid for the manufacturer's recommended etching time. Do not over-etch the veneer as this may cause any preexisting micro-cracks to increase, decreasing the flexural strength of the veneer.<sup>6</sup></p>	<p>The bond between the resin cement and the etched enamel is mechanical in nature. The bond between the etched ceramic veneer and the resin cement is mechanical/chemical in nature and requires special preparation.</p>	<p>The placement of a silane coupling agent is key to provide a strong chemical bond between the cement and the veneer. Care should be taken to follow the manufacturer's recommended application time.<sup>6</sup></p>	<p>The less water present in the laminate veneer, the better the silane coupling agent will work. If possible, immerse the veneers in acetone for five minutes prior to placing the ceramic primer. Also make sure the silane is fresh as the shelf life is usually short.</p>	<p>If a veneer debonds, it is important to evaluate the interface of the veneer. If the resin composite remains on the veneer, there is most likely a problem with the placement technique or the bonding substrate.</p>



## TOOTH PREPARATION >>13-15

13

Clean the tooth with an oil-free, fluoride-free pumice paste. This will ensure removal of the pellicle and any other contaminants.

14

Veneers bonded to a higher amount of dentin substrate (A) have a significantly higher likelihood of debonding than veneers bonded to enamel (B). Try to keep as much enamel present as possible.

15

It is preferable to mask the discolored tooth with a layer of dentin modifier than to mask the color with an opaque cement. Conversely, the chroma of the preparation can be modified by adding small amounts of stains to the veneer.



13



14A

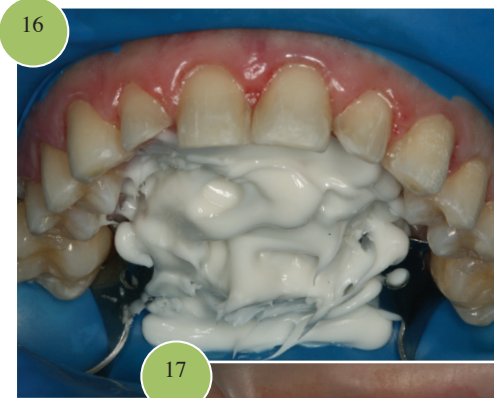


15



14B





PLACEMENT TECHNIQUE >>16-20

16	17	18	19	20
<p>Complete isolation is recommended to avoid contamination of the cement and adhesive with saliva or blood during bonding.</p>	<p>When using try-in pastes, be aware that differences have been found between try-in pastes and the cured resin of the same shade. Make sure that the try-in paste is completely water-soluble and not an actual resin cement with no initiators, as the cleanup of the preparation might be difficult.<sup>7,8</sup></p>	<p>If the laminate veneer is thicker than .8 mm, it is recommended that the polymerization time be doubled, as a thicker veneer might not allow the cement to reach its maximum hardness.<sup>9</sup></p>	<p>Some clinicians prefer to use a highly filled flowable resin or a conventional resin composite to cement the veneer. However, proper steps must be taken to prevent veneer fracture, such as warming the composite in hot water or some type of electric warmer to improve the flow characteristics of the resin. This method allows for a much more controlled seating and cleanup is simplified.<sup>3</sup></p>	<p>By following the preceding tips, clinicians can provide patients with one of the best-fitting, longest-lasting, esthetic ceramic restorations available.</p>

## Acknowledgment

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## References

1. Ghavam M, Amani-Tehran M, Saffarpour M. Effect of accelerated aging on the color and opacity of resin cements. *Oper Dent*. 2010 Nov-Dec;35(6):605-9.
2. Omar H, Atta O, El-Mowafy O, Khan SA. Effect of CAD-CAM porcelain veneers thickness on their cemented color. *J Dent*. 2010;38 Suppl 2:e95-9.
3. Chadwick RG, McCabe JE, Carrick TE. Rheological properties of veneer trial pastes relevant to clinical success. *Br Dent J*. 2008 Mar 22;204(6):E11.
4. Cho SH, Chang WG, Lim BS, Lee YK. Effect of die spacer thickness on shear bond strength of porcelain laminate veneers. *J Prosthet Dent*. 2006 Mar;95(3):201-8.
5. Magne P, Douglas WH. Design optimization in evolution of bonded ceramics for the anterior dentition: a finite element analysis. *Quintessence Int*. 1999;30:661-72.
6. Alex G. Preparing porcelain surfaces for optimal bonding. *Compend Contin Educ Dent*. 2008 Jul-Aug;29(6):324-35.
7. ALGhazali N, Laukner J, Burnside G, Jarad FD, Smith PW, Preston AJ. An investigation into the effect of try-in pastes, uncured and cured resin cements on the overall color of ceramic veneer restorations: an in vitro study. *J Dent*. 2010;38 Suppl 2:e78-86.
8. Ulrich W. Cementing porcelain laminate veneers. *Dent Econ*. 2005 Mar;95(3):72-8.
9. Usumez A, Ozturk AN, Usumez S, Ozturk B. The efficiency of different light sources to polymerize resin cement beneath porcelain laminate veneers. *J Oral Rehabil*. 2004 Feb;31(2):160-5. **jCD**

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## Suggested Reading

Hamlett K. The art of veneer cementation. *Alpha Omegan*. 2009 Dec;102(4):128-32.



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