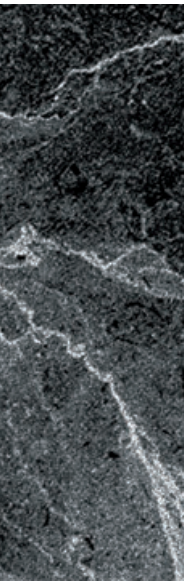

# Ask the Experts

## RESIN BONDING TO CERAMIC

**Guest Expert**
Raymond L. Bertolotti, DDS, PhD*

**Associate Editor**
Edward J. Swift Jr., DMD, MS

QUESTION: After reading the "Ask the Experts" article in *JERD* (Volume 19, Number 5), I remain confused by one particular aspect of the recommended procedure for bonding resin cements to zirconia or alumina frameworks. It has always been my understanding that the use of ceramic primers is not necessary for these types of frameworks. Can you please clarify?

ANSWER: The adhesive Panavia F 2.0 (Kuraray, Tokyo, Japan) directly adheres to alumina[1] and zirconia,[2] without the need for any special primer. Similarly, Bistite 2 DC (Tokuyama, Osaka, Japan) directly adheres. As stated by Dr. Markus Blatz in the "Ask the Experts" piece in *JERD* Volume 19, Number 5, aluminum oxide blasting of the ceramic surface is a requirement for stable adhesion. However, after reading the "Ask the Experts" piece, it is not apparent why one would need to follow a primer with "a composite luting agent that contains the same adhesive monomer as the primer." If the luting agent is Panavia or Bistite, that combination seems redundant. Consequently, the protocol suggested by Dr. Blatz might be called "doing a good job the hard way."

For many years, silane has been used to bond to silica ceramics etched with hydrofluoric acid (HF). Recently, clinicians have been confused about the use of silane on the newer, nonetchable ceramics such as alumina and zirconia. On such ceramics, silane does not yield a stable bond.[1]

In an attempt to eliminate confusion and create a more "universal" bonding protocol, the Clearfil Ceramic Primer (Kuraray) was developed to bond resin to both HF-etchable silica-based ceramics and other nonetchable ceramics, such as alumina and zirconia. This primer combines silane for silica ceramics and the 10-MDP adhesive monomer of Panavia, a monomer that bonds to alumina and zirconia (and also metal). As with the Clearfil Porcelain Bond,[3] HF etching of etchable ceramics is not required; only sandblasting is used, as is done to nonetchable ceramics. The primer eliminates the need to use an adhesive-containing luting composite such as Panavia or Bistite. Instead, a more conventional composite without a built-in adhesive monomer may be used.

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Besides improving "compromised retention and marginal seal," as stated by Dr. Blatz, another compelling advantage of bonding is the "reinforcement" of the all-ceramic restoration. One investigation,[4] coauthored by Dr. Blatz, reported about 55% increase in strength when comparing the luting of Procera (Nobel Biocare, Yorba Linda, CA, USA) with Panavia F 2.0 and zinc phosphate cement.

A weaker self-etching adhesive cement (Unicem, 3M ESPE, St. Paul, MN, USA) provided only about 10% strength increase over zinc phosphate while exhibiting much greater microleakage than Panavia F 2.0.

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Editor's Note: If you have a question on any aspect of esthetic dentistry, please direct it to the Associate Editor, Dr. Edward J. Swift Jr. We will forward questions to appropriate experts and print the answers in this regular feature.

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