

FINAL REPORT

In-vitro-Evaluation of shear bond strength RelyX Unicem 2 cement to zirconia comparing 2 primers.

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March 7, 2012

INTRODUCTION

Shear bond strength testing can be a useful tool for screening adhesion promotion materials.

The purpose of this laboratory study is to evaluate the shear bond strength of resin cement to zirconia using two primers.

METHODS AND MATERIALS

Processed zirconium discs were air abraded with 50 micron alumina and rinsed and dried. The prepared specimens were divided into 2 groups of 12 for each primer. The materials tested were:

Clearfil Ceramic Primer lot 00021A

Premier Zirconium Primer lot AP216112

RelyX Unicem 2 lot 462753

Each primer system was applied following the specific instructions provided. After the application of the primers, cylinders of resin cement were placed on the disks using an Ultradent specimen former. The cement was visible light cured for 30 seconds using a SmartLite LED curing lamp with an output of at least 800 mW/cm².

The specimens were stored in distilled water at 37° C for 72 hours. The specimens were placed in an MTS Insight test frame equipped with an Ultradent notched chisel. The specimens were aligned with the shaped chisel against and parallel to the bonding sites. Each cylinder was placed under continuous loading at 1 mm per minute until fracture occurred. Shear bond strength was calculated in megapascals units (MPa).

RESULTS

Mean Shear Bond Strength (SBS) values for each group are reported below in MegaPascals (MPa):

Enamel:

	Clearfil Primer	Premier Primer
Zirconia	18.5 ± 4.8	15.6 ± 3.8

A t-test was done for the data analysis. There was not a significant differences between the groups ($p=0.2044$).

DISCUSSION/CONCLUSIONS

Both primers increased the adhesive strength of the Unicem cement to prepared zirconia. The relative quality of each primer can only be assessed by evaluating the longer term stability after extended water storage.



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