

# STUDIEN ZUR MATERIALVERWENDUNG PANAVIA V5 PASTE

PANAVIA™ V5 ist das optimale Material um Implantat-Abutments zu zementieren. Es gibt keinen besseren Weg, Kronen, Maryland- und Adhäsivbrücken, Stumpfaufbauten sowie Veneers dauerhaft zu zementieren. Um das auszuführen, haben wir im Folgenden vier Studien zu PANAVIA™ V5 zusammengestellt.

## Studie 1

In der Studie wurde die Mikrozugfestigkeit ( $\mu$ TBS) von Panavia V5 und Panavia SA Cement an Kompositblöcken nach verschiedenen Vorbehandlungsmethoden (Abstrahlung/Silanisierung) getestet.

Es ist zu sehen, dass Panavia V5 sehr hohe Werte zeigte – bei der richtigen Vorbehandlung über 80 MPa auch nach 6 Monaten Wasserlagerung. Sogar ohne Vorbehandlung zeigte Panavia V5 Werte von über 25 MPa nach 6 Monaten Wasserlagerung.

Dent Mater J. 2016;35(1):21-8. <https://doi.org/10.4012/dmi.2015-234>.

### **Bonding effectiveness of self-adhesive and conventional-type adhesive resin cements to CAD/CAM resin blocks. Part 1: Effects of sandblasting and silanization**

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### **Abstract**

The present study assessed the effect of sandblasting and silanization on resin cement bond strengths to CAD/CAM resin blocks. Twenty four blocks (KATANA AVENCIA BLOCK) were divided into two resin cement groups (PANAVIA V5 [PV5] and PANAVIA SA CEMENT HANDMIX [PSA]), and further divided into four subgroups representing different surface treatment methods: no treatment (Ctl), silanization (Si), sandblasting (Sb), and Sb+Si. After resin application, microtensile bond strengths ( $\mu$ TBSs) were measured immediately, 1, 3 and 6 months after water storage. In addition, surfaces resulting from each of the treatment methods were analyzed by scanning electron microscopy (SEM). Three-way analysis of variance revealed a statistically significant effect for the parameters 'surface treatment' ( $p < 0.001$ ,  $F = 370$ ), 'resin cement' ( $p < 0.001$ ,  $F = 103$ ,  $PSA < PV5$ ), and 'water aging' ( $p < 0.001$ ,  $F = 18$ ). Control treatment yielded significantly lower  $\mu$ TBS values compared to other treatment subgroups ( $p < 0.001$ ). The highest bond strength was achieved with Sb+Si treatment. SEM revealed that sandblasting roughened surfaces.

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## Studie 2

Hier wurde die Mikrozugfestigkeit ( $\mu$ TBS) von Panavia V5 und Panavia F2.0 an Dentin und Kompositblöcken mit unterschiedlichen Schichtstärken getestet. Panavia V5 zeigte sehr hohe Werte zu Dentin von  $54,0 \pm 10,3$  MPa und sogar der niedrigste Wert von 22,9 MPa ist im Vergleich zu anderen Zementen (an Dentin) sehr hoch.

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### **The effect of curing conditions on the dentin bond strength of two dual-cure resin cements**

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[www.ncbi.nlm.nih.gov/pubmed/28126243](http://www.ncbi.nlm.nih.gov/pubmed/28126243)

#### **Abstract**

##### **Purpose**

The purpose of this study was to determine the effect of the curing condition (i.e., the curing mode and restoration thickness) on the tensile bond strength of a dual-cure resin cement applied to dentin.

##### **Methods**

Indirect composite resin disks (1, 2, and 3mm in thickness) were prepared. The irradiance of a halogen light curing unit through each disk was measured by a curing radiometer. A measurement was also taken for the condition with no disk. Following this, two dual-cure resin cements, Panavia F2.0 and Panavia V5, were polymerized in either dual-cure mode or self-cure mode to bond the composite resin disk to the flat dentin surface. The specimens were sectioned and subjected to a microtensile bond strength ( $\mu$ TBS) test after 24h of water storage. The data were statistically analyzed by two-way ANOVA followed with multiple comparisons by post-hoc Tukey's test ( $\alpha=0.05$ ).

##### **Results**

The irradiance values [mW/cm<sup>2</sup>] measured through indirect composite resin disks were 600 (0 mm), 200 (1 mm), 90 (2 mm), and not detected (3 mm). Two-way ANOVA indicated that both the curing condition and the type of resin cement affected the  $\mu$ TBS ( $p<0.001$ ). The  $\mu$ TBS results for Panavia V5 bonded to dentin were significantly higher than those of Panavia F2.0 bonded to dentin ( $p<0.05$ ).

##### **Conclusions**

The curing condition affected the tensile bond strength of the dual-cure resin cements to dentin. A newly developed resin cement, Panavia V5, showed higher dentin bonding than Panavia F2.0 in both dual- and self-cure modes.

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## Studie 3

In dieser Studie geht es um Mikrozugfestigkeit ( $\mu$ TBS) von Panavia V5 und zwei weiteren Zementen an Dentin nach 10.000 Thermozyklen. Panavia V5 war die einzige Gruppe, die hohe und stabile Haftkraft gezeigt hat ( $52,6 \pm 4,8$  MPa nach 10.000 Zyklen).

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### **Adhesion durability of dual-cure resin cements and acid-base resistant zone formation on human dentin**

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[www.ncbi.nlm.nih.gov/pubmed/28126243](http://www.ncbi.nlm.nih.gov/pubmed/28126243)

#### **Abstract**

##### **Objectives**

Bond durability and resistance to acid-base challenge of dentin with dual-cure resin cement have been rarely investigated. The purpose of this study was to evaluate dentin bond strength and observe the adhesive-dentin interface after acid-base challenge using three different dual-cure resin cements.

##### **Methods**

Thirty dentin surfaces from caries-free human premolars were ground and bonded with one of three dual-cure resin cements: PANA VIA V5 (V5), ESTEC EM II (E II) and Rely X Ultimate (RXU) and thermocycled for 0, 5,000 and 10,000 cycles. A microtensile bond strength ( $\mu$ TBS) test was undertaken and the interface of the bonded specimens after acid-base challenge was examined by SEM.

##### **Results**

The  $\mu$ TBS of V5 exhibited a stable bond strength despite thermal cycling while the bond of EII and RXU after 10,000 cycles dropped significantly among all thermal cycle periods ( $p < 0.05$ ). An acid-base resistant zone (ABRZ) was observed in all groups, however, the morphology of the bonded interface differed among the tested cements.

##### **Conclusion**

Bonding durability to dentin and ABRZ morphologies differed among the cements evaluated. PANA VIA V5 cement system with tooth primer provided the most reliable bond strength and was best able to resist the acid-base challenge.

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## Studie 4

In der Studie wurde die Zugfestigkeit (TBS) von Panavia V5 und Panavia SA Cement Plus an Zirkon nach unterschiedlichen Abstrahlung (0,1, 0,2 und 0,4 MPa) und nach 150 Tagen Wasserlagerung getestet. Dabei zeigte Panavia V5 an Zirkon eine sehr hohe und stabile Haftkraft.

Hinweis: Abstrahlung mit 1–2 bar ist auch die Empfehlung von Kuraray Noritake.

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### **Effects of alumina-blasting pressure on the bonding to super/ultra-translucent zirconia**

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[www.ncbi.nlm.nih.gov/pubmed/30826073](http://www.ncbi.nlm.nih.gov/pubmed/30826073)

#### **Abstract**

##### **Objectives**

Translucent zirconia has brought the advantages such as less tooth preparation, biological compatibility, high strength, good mechanical properties, and less antagonist wear. This study's aim was to elucidate how clinically relevant surface treatments; alumina-abrasion and priming effect on bond strength of Y-PSZ in three different translucency grades after long-term water storage.

##### **Materials and Methods**

Three highly translucent Y-PSZ grades were ground flat with #600-grit SiC paper. Four different surface treatments (untreated, alumina blasting at 0.1 MPa or 0.2 MPa or 0.4 MPa) and two resin cements (PANAVIA V5 and PANAVIA SA CEMENT PLUS AUTOMIX) were tested. The bonded specimens were stored in water for 1 day, 30 days and 150 days and tensile bond strength (TBS) were measured with universal testing machine at a crosshead speed of 2 mm/min (n=10). The surface roughness (Sa) measurement and surface morphology analysis without alumina-blasting pressure (untreated) and with alumina-blasting pressures (0.1 MPa, 0.2 MPa and 0.4 MPa) for three different zirconia grades were evaluated with 3D-Laser Scanning Confocal Microscope.

##### **Results**

Different alumina-blasting pressures and different storage periods affected the bonding of resin cement to translucent zirconia. The Weibull moduli increased in some groups after 150 days storage. After 1 day and 30 days storage, 0.4 MPa alumina-blasting pressure provided superior bond strength, however, after 150 days, 0.2 MPa gave reliable and stable bond strength.

##### **Significance**

Alumina-blasting pressure of 0.2 MPa was the most effective for reliable and durable bonding performance to translucent zirconia after long-term water storage.

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